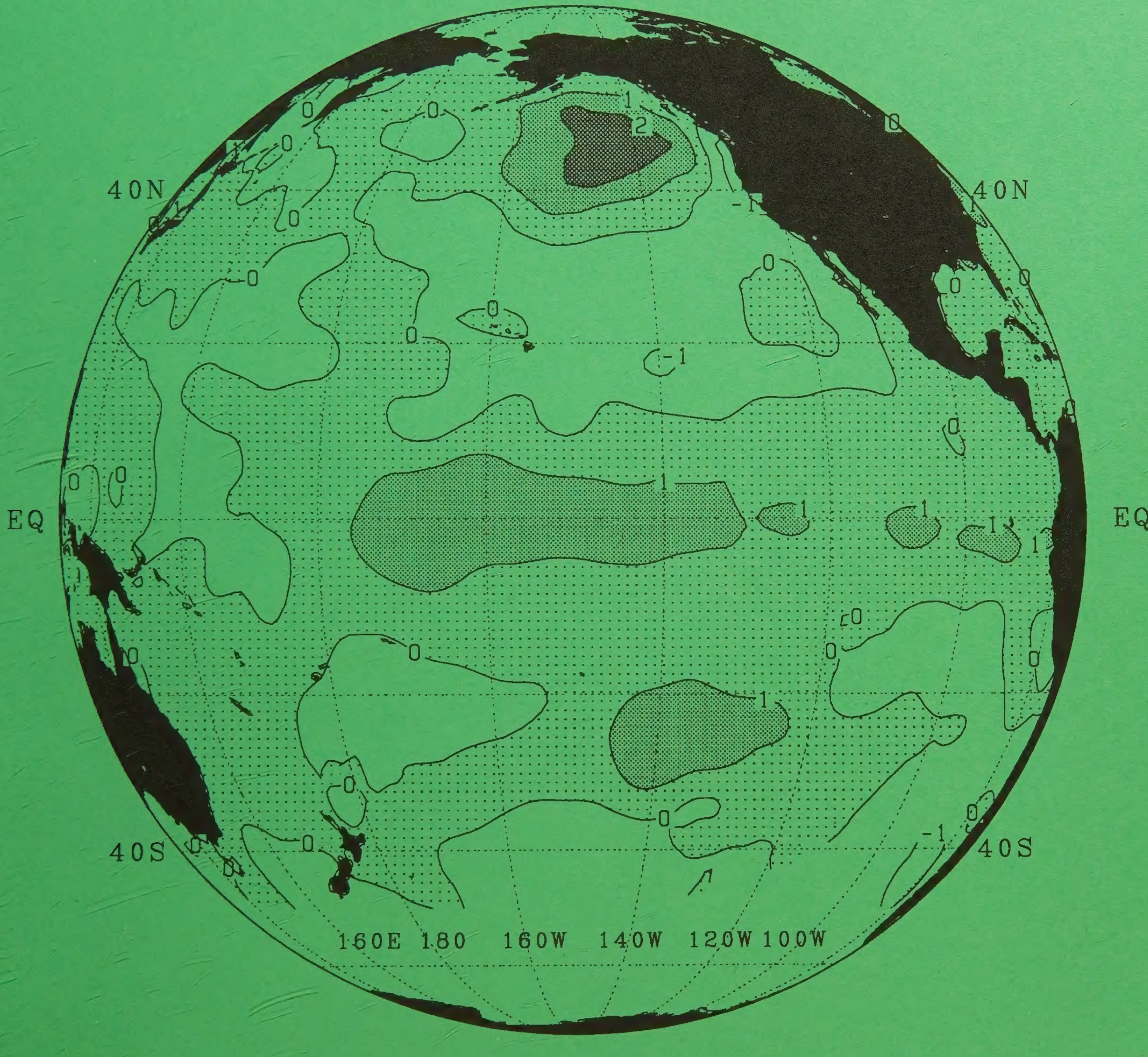
気象庁海洋月報

Monthly Ocean Report
October 2002 (No. 118)



Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成14年10月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
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Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、2002 年 10 月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for October 2002 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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海況の特徴（２００２年１０月）

日本近海の海況

海面水温は、福島県沖と北海道東方を除き全般に平年より高く、日本海北部、東海沖、三陸沖東部で＋1℃を超える正偏差が見られた。44° N、150° E付近には－１℃を超える負偏差が見られた（図４）。

黒潮は、四国から紀伊半島に接岸した後、上・中旬は東海沖を東北東に流れ、三宅島付近を通り、房総半島沖を北東に流れていた。下旬は東海沖を東に流れ、33.5° N、139° E付近で北東に向きを変え、房総半島に接岸して流れていた（図９）。

太平洋の海況

太平洋赤道域の海面水温は、175° Wから125° Wにかけてと110° W以東で平年より1℃以上高かった。一方、125° Eから140° Eにかけてと155° Eから170° Eにかけては平年より低かった。

北太平洋の海面水温は、35° Nから55° Nの160° Wから130° Wにかけてとフィリピン周辺で平年より1℃以上高く、40° Nから50° Nの150° Wから135° Wにかけて＋2℃を超える正偏差が見られた。一方、15° Nから30° Nの145° Wから135° Wにかけてでは、平年より0.5℃以上低かった（図１７）。

Highlights October 2002

Seas adjacent to Japan

SSTs were generally above normal in seas adjacent to Japan except off Fukushima Prefecture and east of Hokkaido. Positive SST anomalies exceeding +1℃ were found in the northern part of the Japan Sea, off Tokai and in the eastern part of the sea off Sanriku. Negative SST anomalies exceeding -1℃ were found around 44°N, 150°E (Fig. 4).

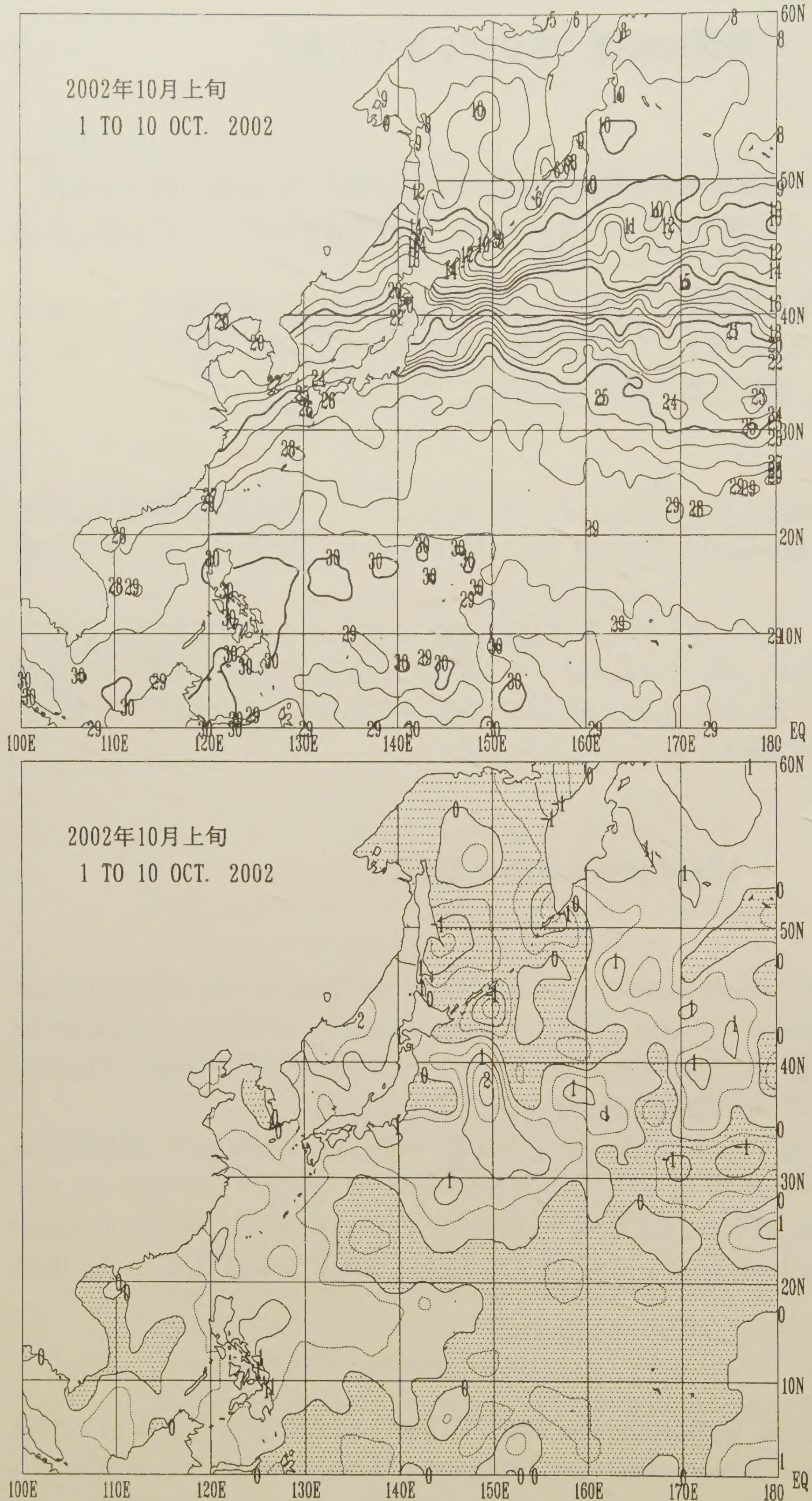
The Kuroshio flowed close to coasts from Shikoku to the Kii Peninsula throughout the month. In the first and second 10 days, it flowed ENE-ward off Tokai. After passing near Miyake Island, it flowed NE-ward off the Boso Peninsula. In the rest of the month, it flowed eastward off Tokai and turned NE-ward around 33.5°N, 139°E, then it flowed close to the Boso Peninsula (Fig. 9).

Pacific Ocean

In the equatorial Pacific, SSTs were more than 1℃ above normal from 175°W to 125°W and east of 110°W. SSTs were below normal from 125°E to 140°E and from 155°E to 170°E.

In the North Pacific, SSTs were more than 1℃ above normal from 35°N to 55°N between 160°W and 130°W and around the Philippines. Positive SST anomalies exceeding +2℃ were found from 40°N to 50°N between 150°W and 135°W. SSTs were more than 0.5℃ below normal from 15°N to 30°N between 145°W and 135°W (Fig. 17).

Ten-day mean SST & Anomalies



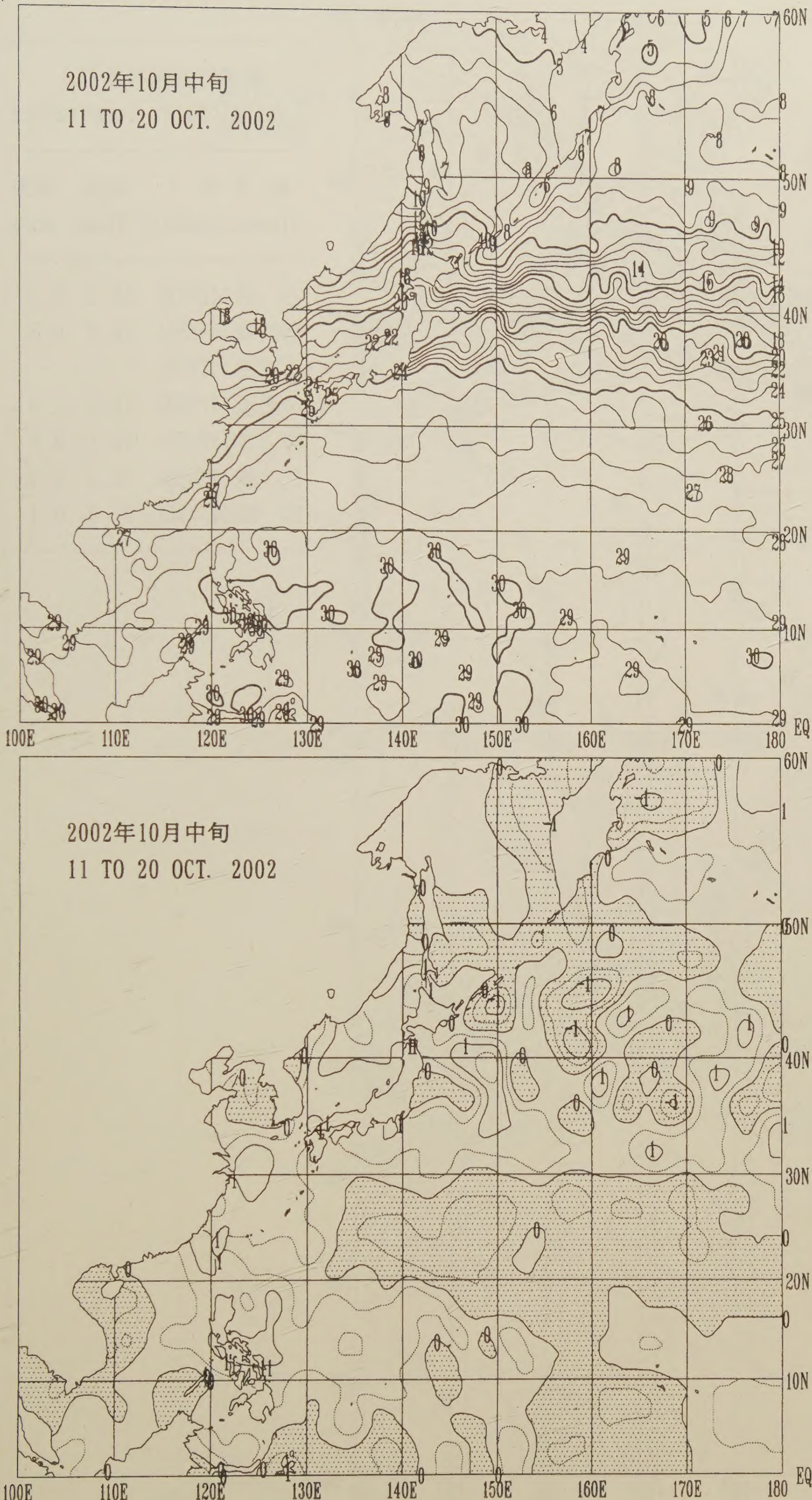
第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2002年10月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in OCT 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	27.3	-0.1
御前崎(47655)	23.1	0.6
八丈島(47678)	-	-
小名浜(47598)	19.9	-0.6
宮　古(47585)	18.6	-0.2
江　差(47428)	19.9	0.9
浜　田(47755)	23.4	0.5

Ten-day mean SST & Anomalies



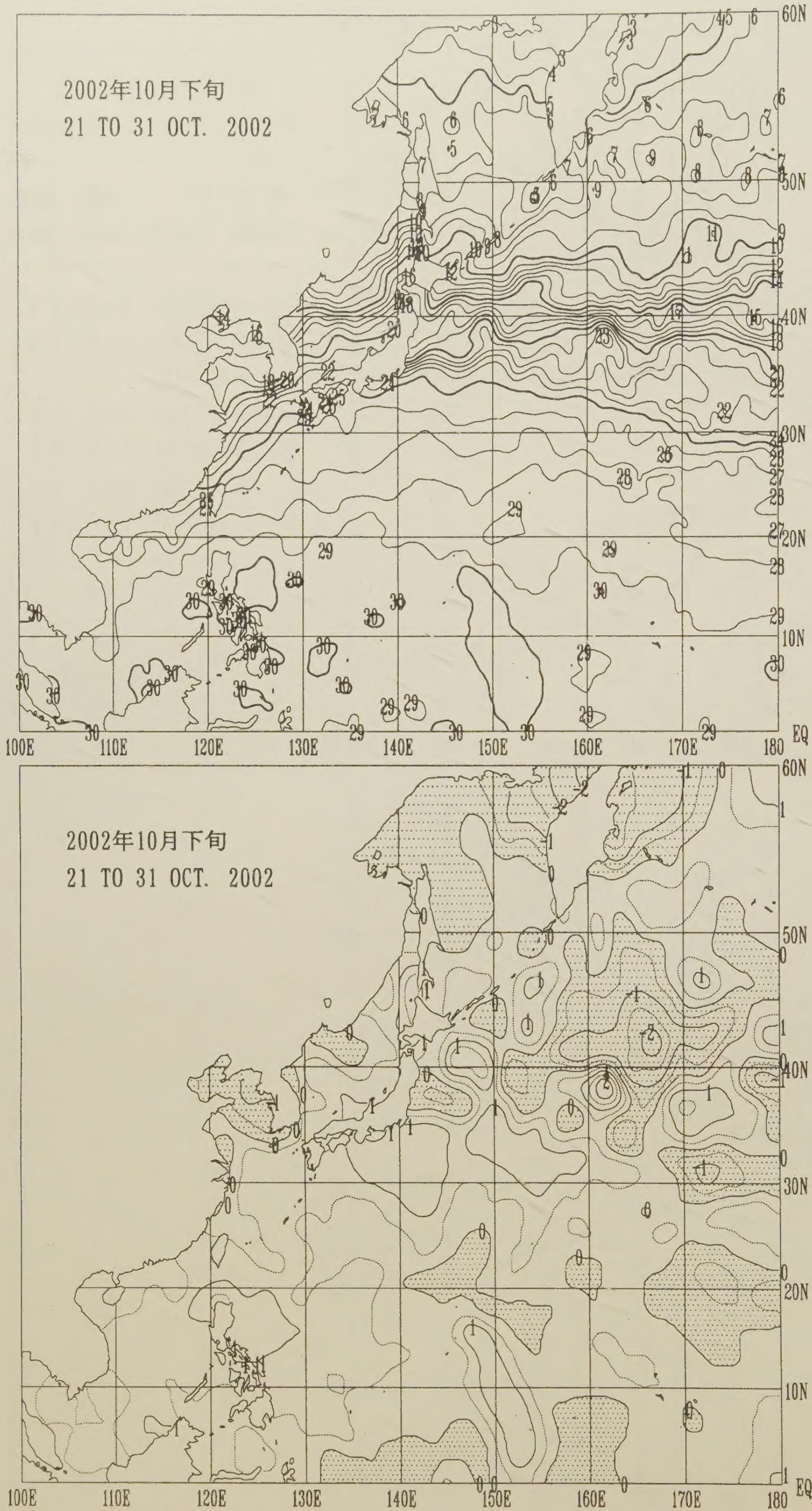
旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	27.2	0.5
御前崎(47655)	22.6	1.3
八丈島(47678)	-	-
小名浜(47598)	18.8	-0.8
宮　古(47585)	18.5	0.4
江　差(47428)	18.9	1.6
浜　田(47755)	22.7	0.8

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Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in OCT 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies

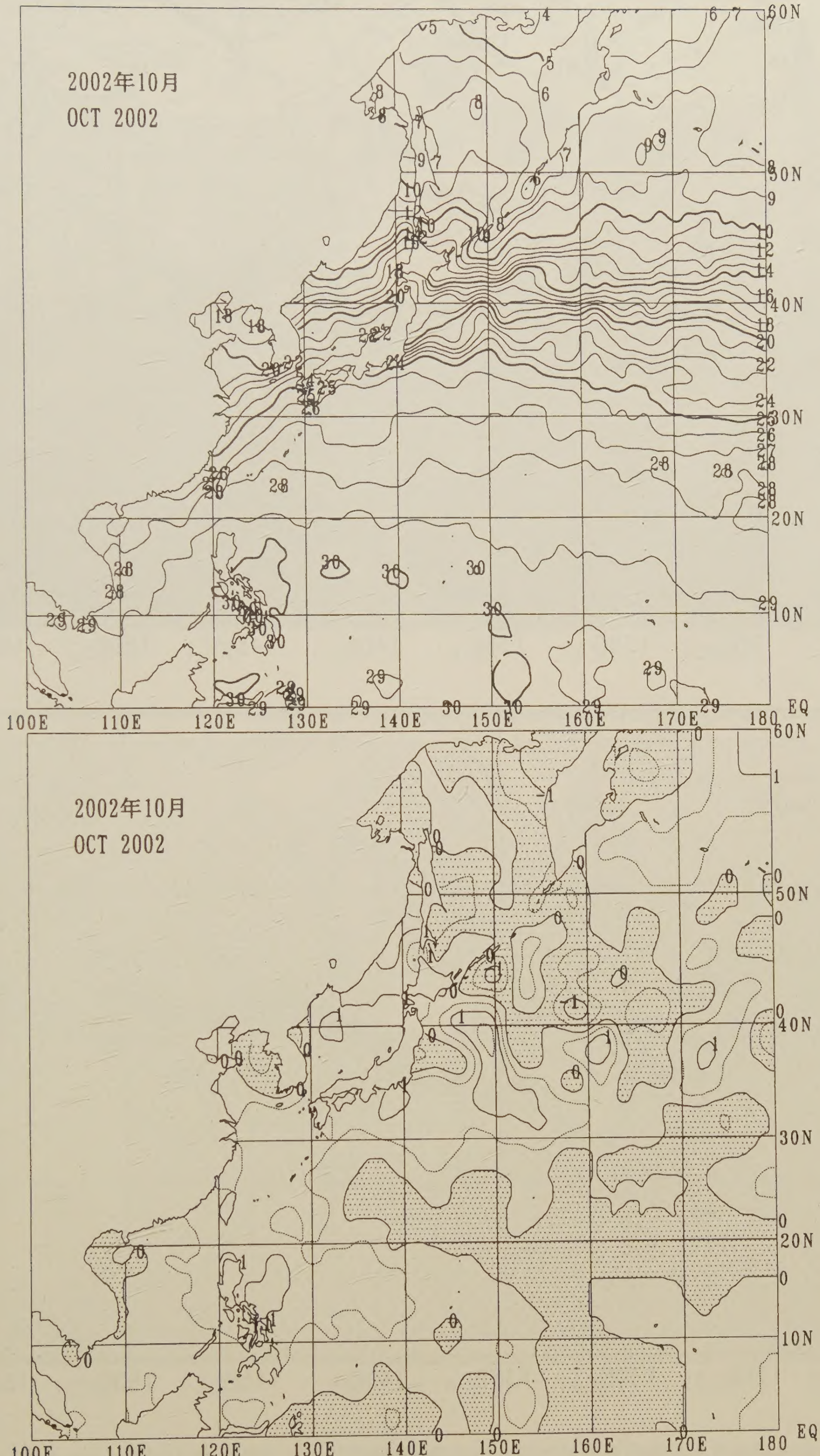


旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	26.2	0.2
御前崎(47655)	20.3	0.3
八丈島(47678)	-	-
小名浜(47598)	17.5	-1.0
宮　古(47585)	17.1	0.0
江　差(47428)	15.8	0.3
浜　田(47755)	21.0	0.4

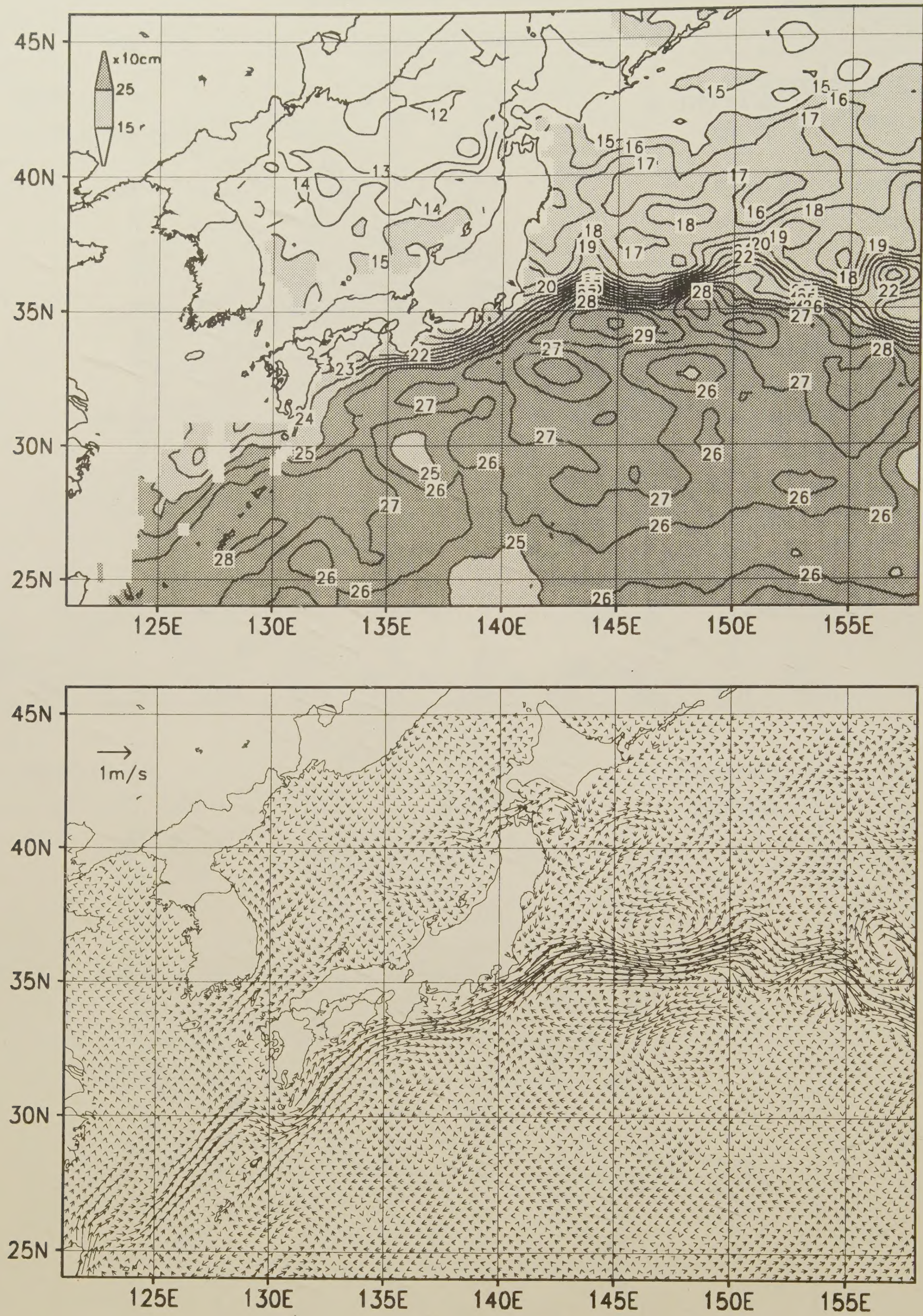
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2002年10月下旬)

Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in OCT 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



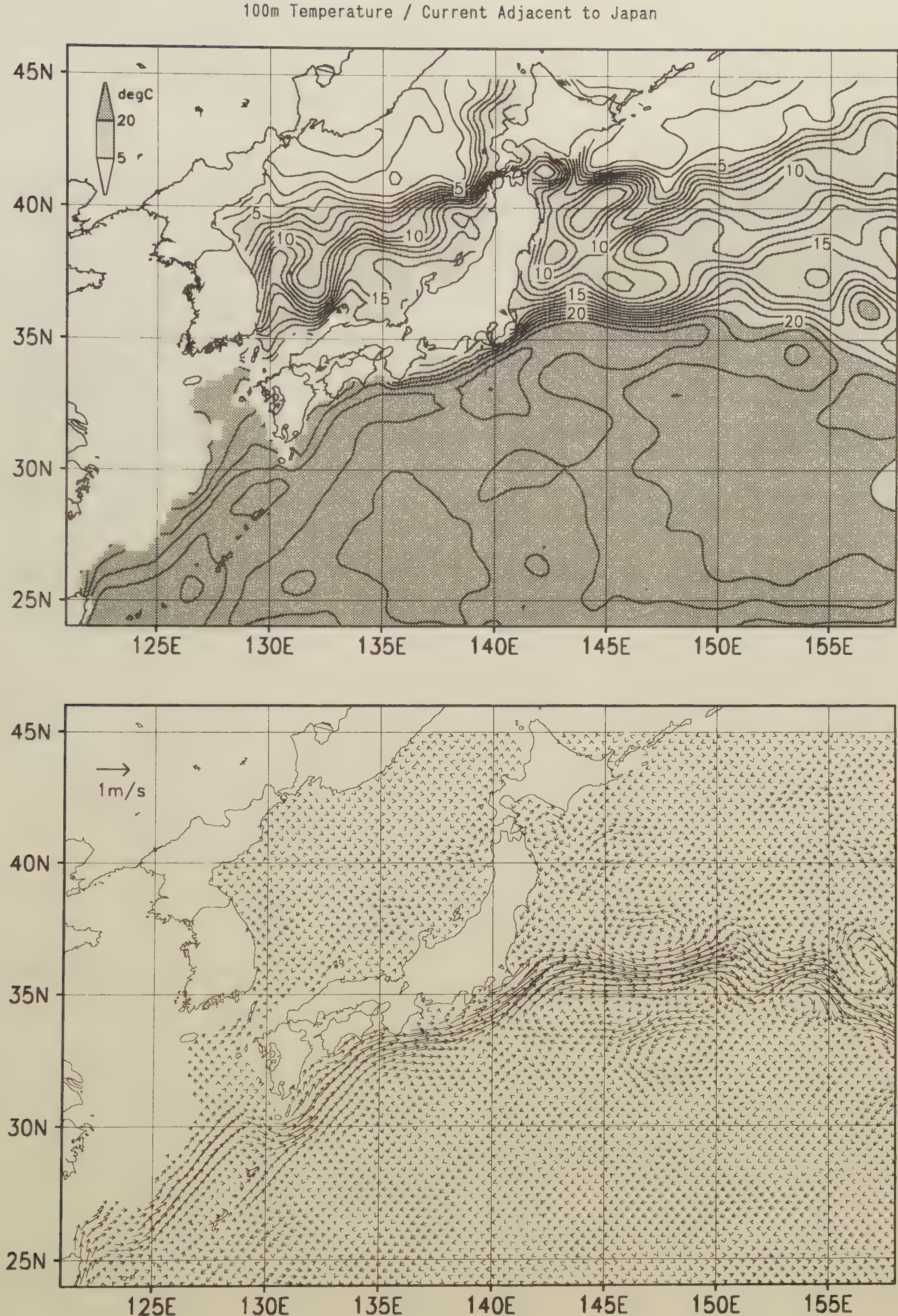
第4図 北西太平洋月平均海面水温図(上)及び偏差図(下) (2002年10月)

Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for OCT 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



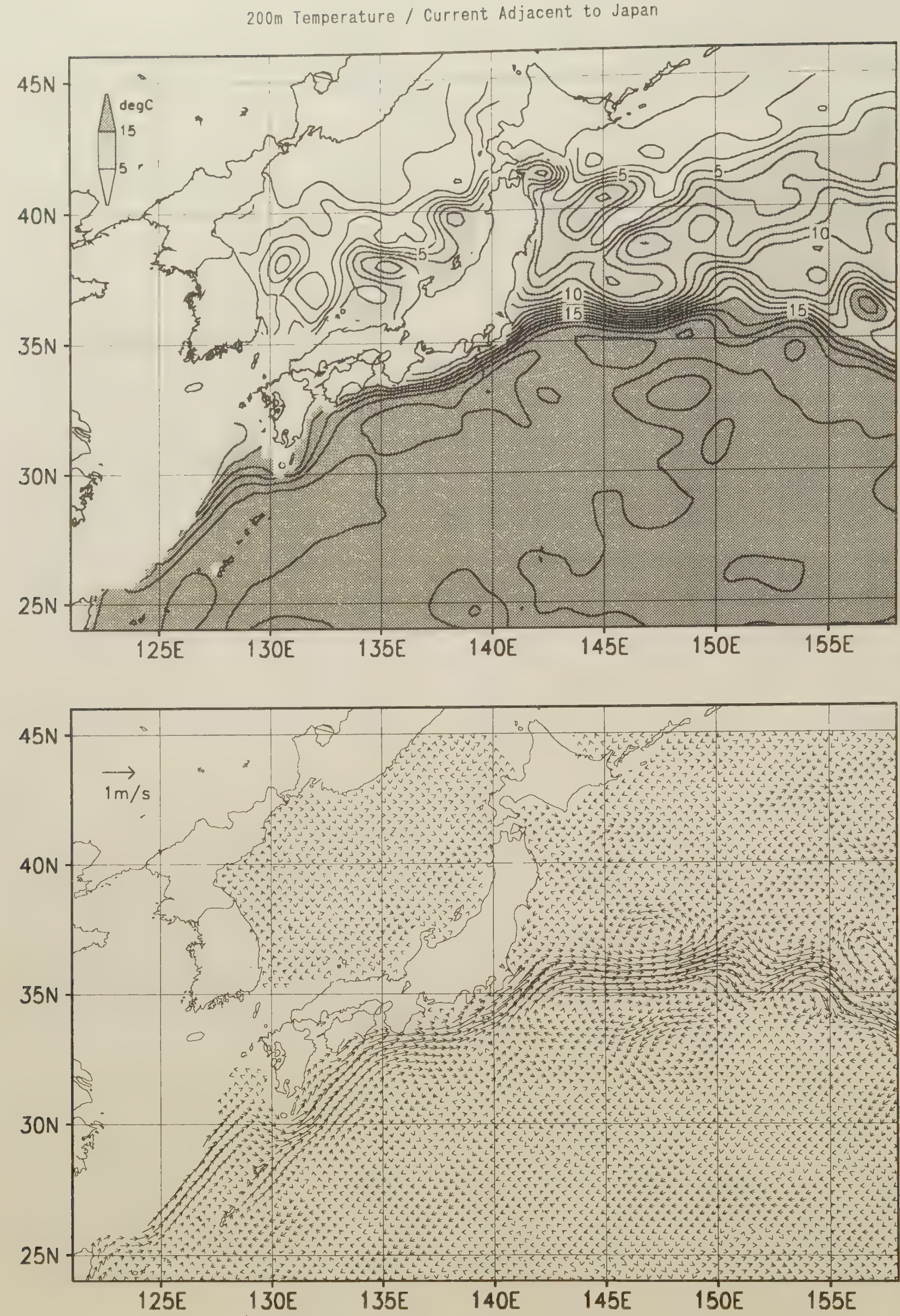
第5図　日本近海月平均海面高度分布図(上)と海面海流図(下)　(2002年10月)
（海洋総合解析システムによる）

Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for October 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



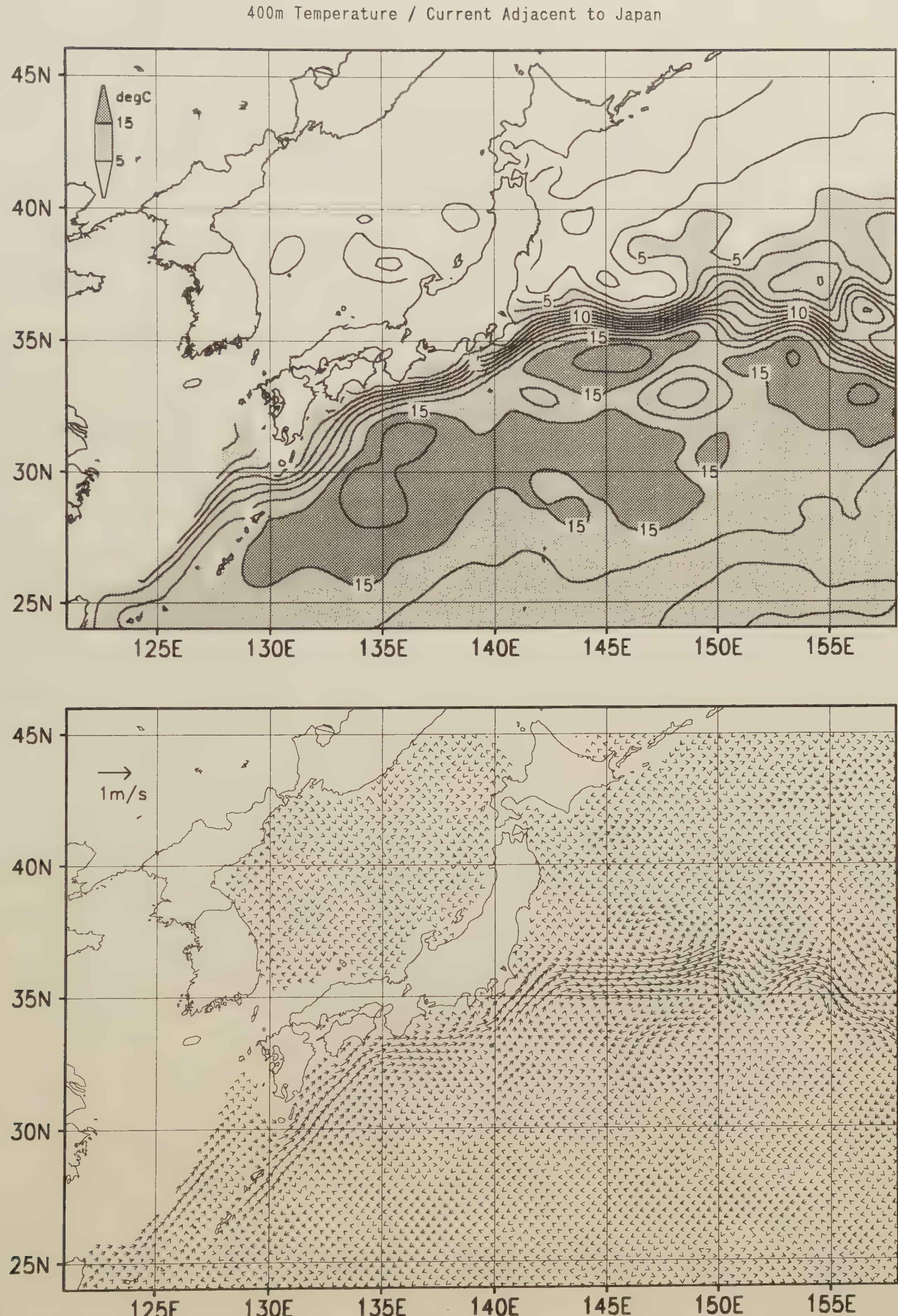
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Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



第７図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 200 m）（2002 年 10 月）
（海洋総合解析システムによる）

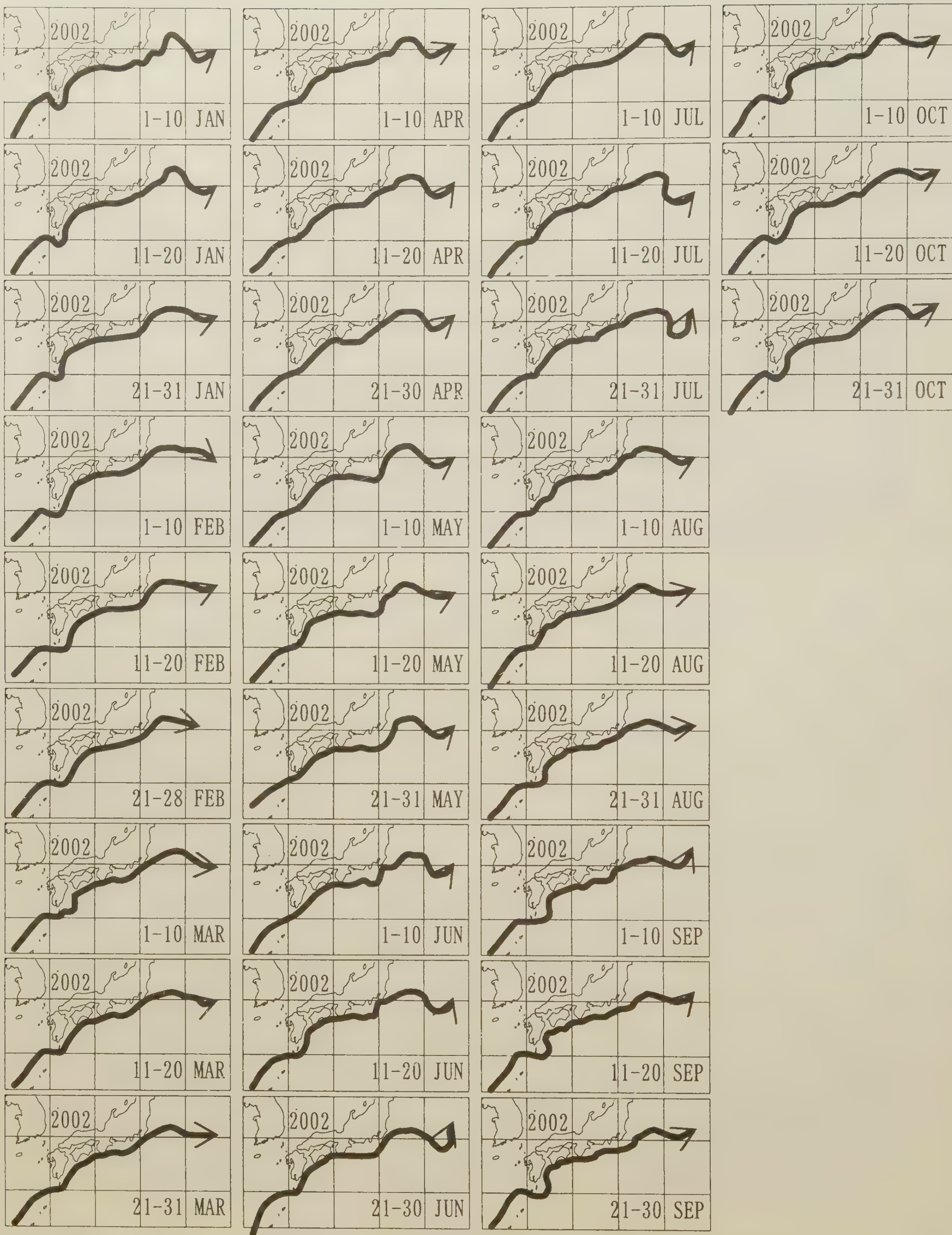
Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2002. Contour interval is 1 ˚C (top). (calculated by the Ocean Comprehensive Analysis System)



第 8 図　日本近海月平均表層水温図（上）と表層海流図（下）　（深さ 400 m）(2002 年 10 月)
（海洋総合解析システムによる）

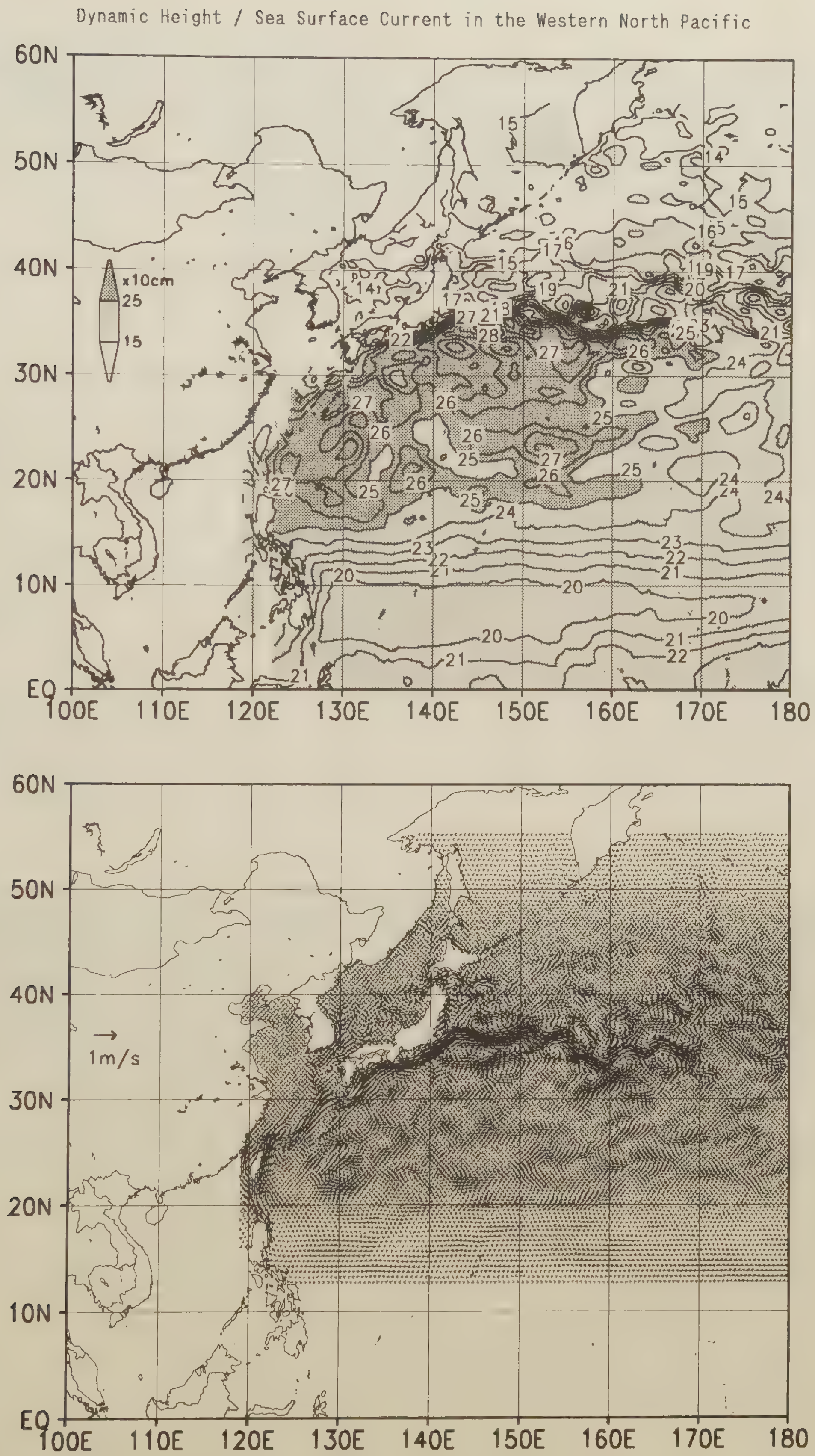
Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for October 2002. Contour interval is 1 ˚C (top). (calculated by the Ocean Comprehensive Analysis System)

Location of the Kuroshio axis



第9図 旬別黒潮流軸図

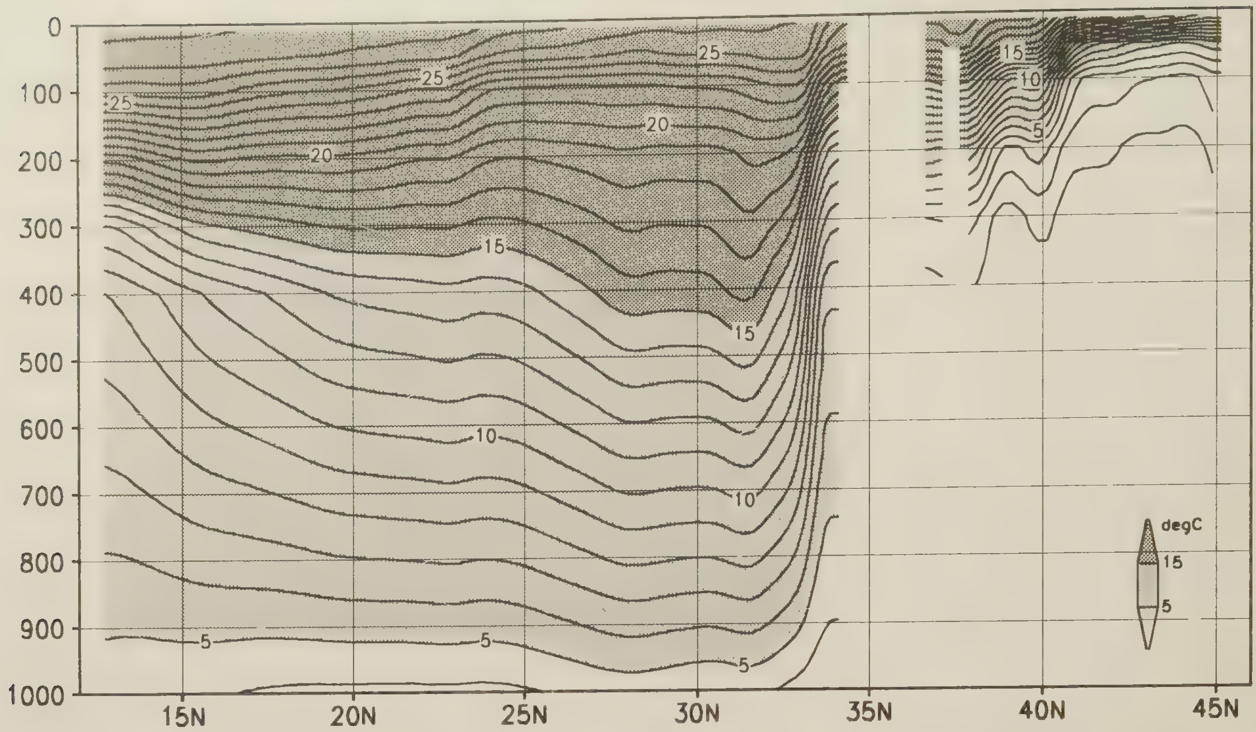
Fig. 9 Location of the Kuroshio axis



第 10 図　北西太平洋月平均海面高度分布図 (上) と海面海流図 (下) （2002 年 10 月）
（海洋総合解析システムによる）

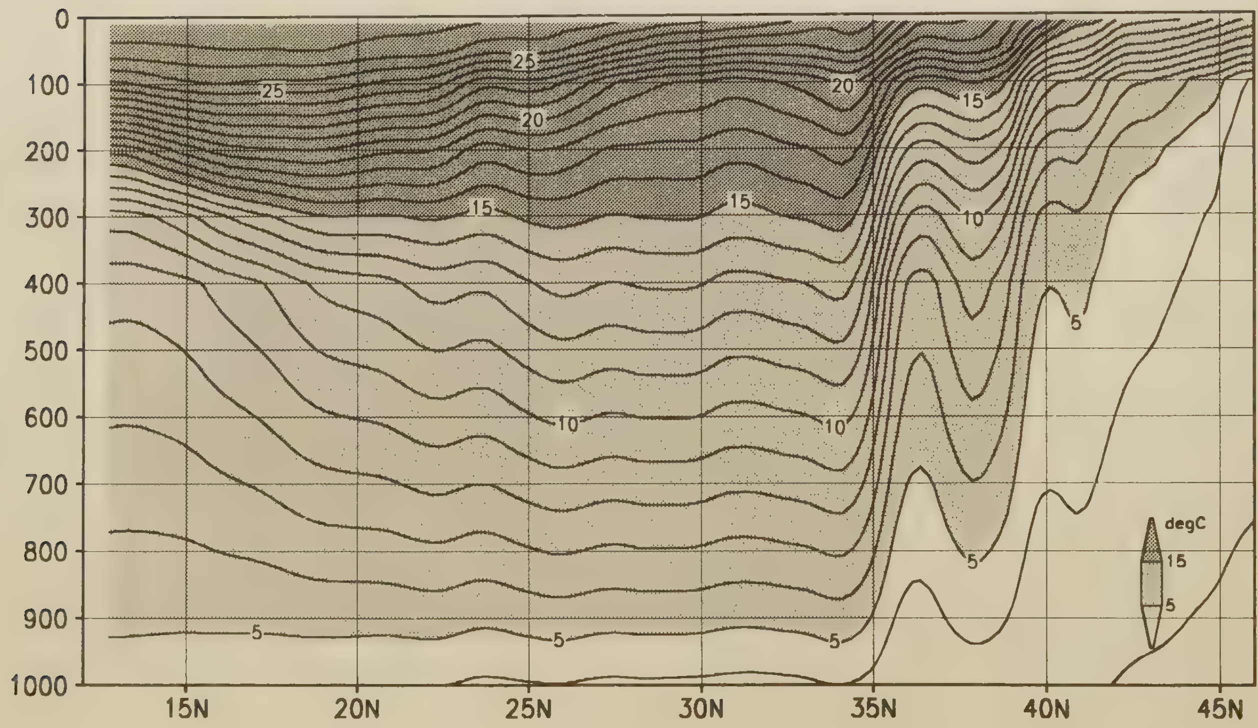
Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for October 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)

Depth-Latitude Sections of Temperature along 137E / 165E



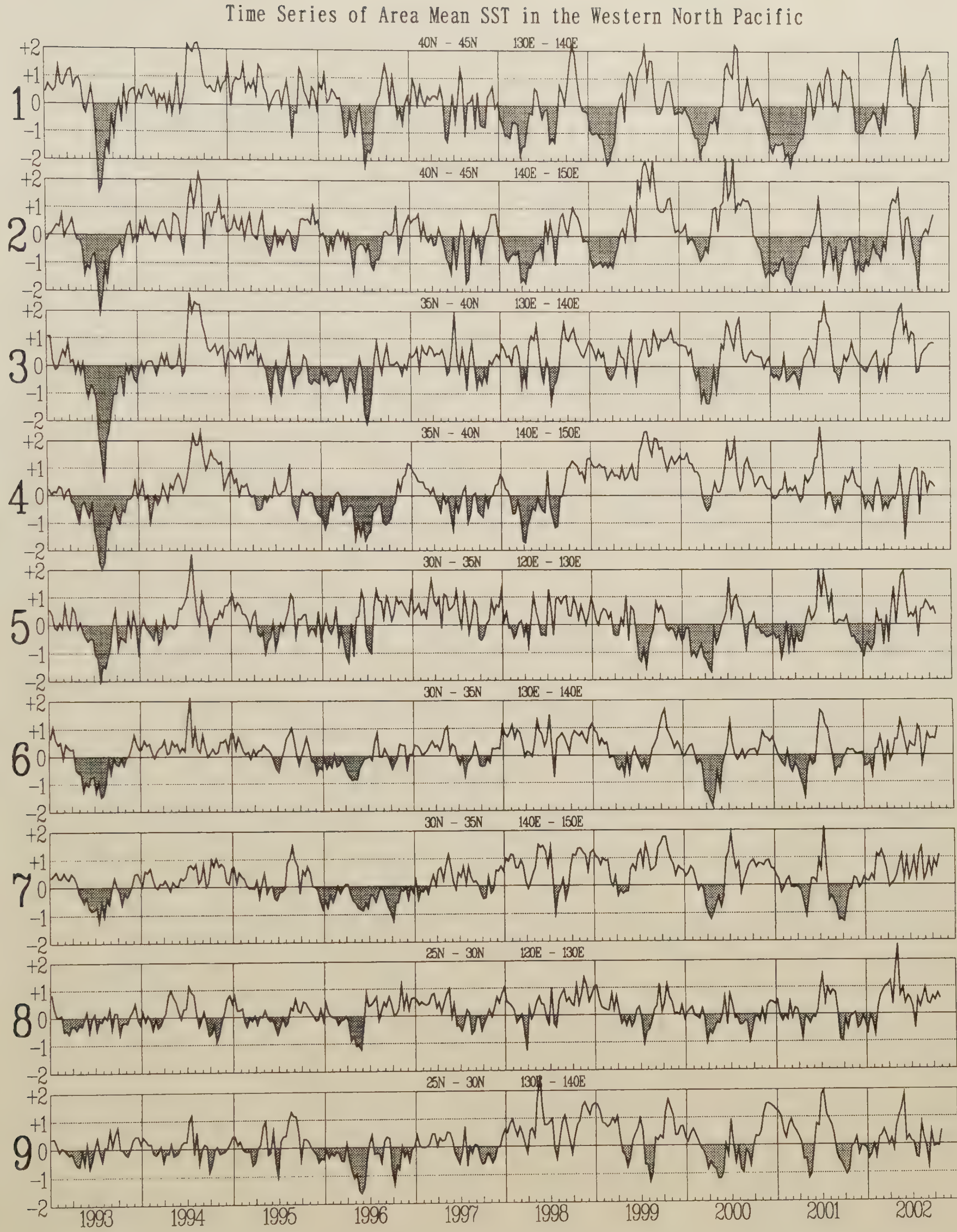
第 11 図　東経 137° 線に沿う月平均表層水温の鉛直断面図 （2002 年 10 月）
（海洋総合解析システムによる）

Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for October 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



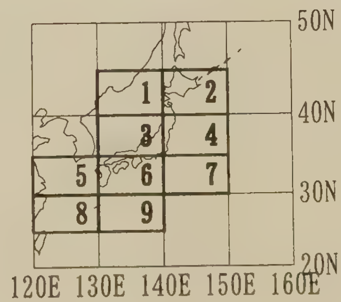
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（海洋総合解析システムによる）

Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for October 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)

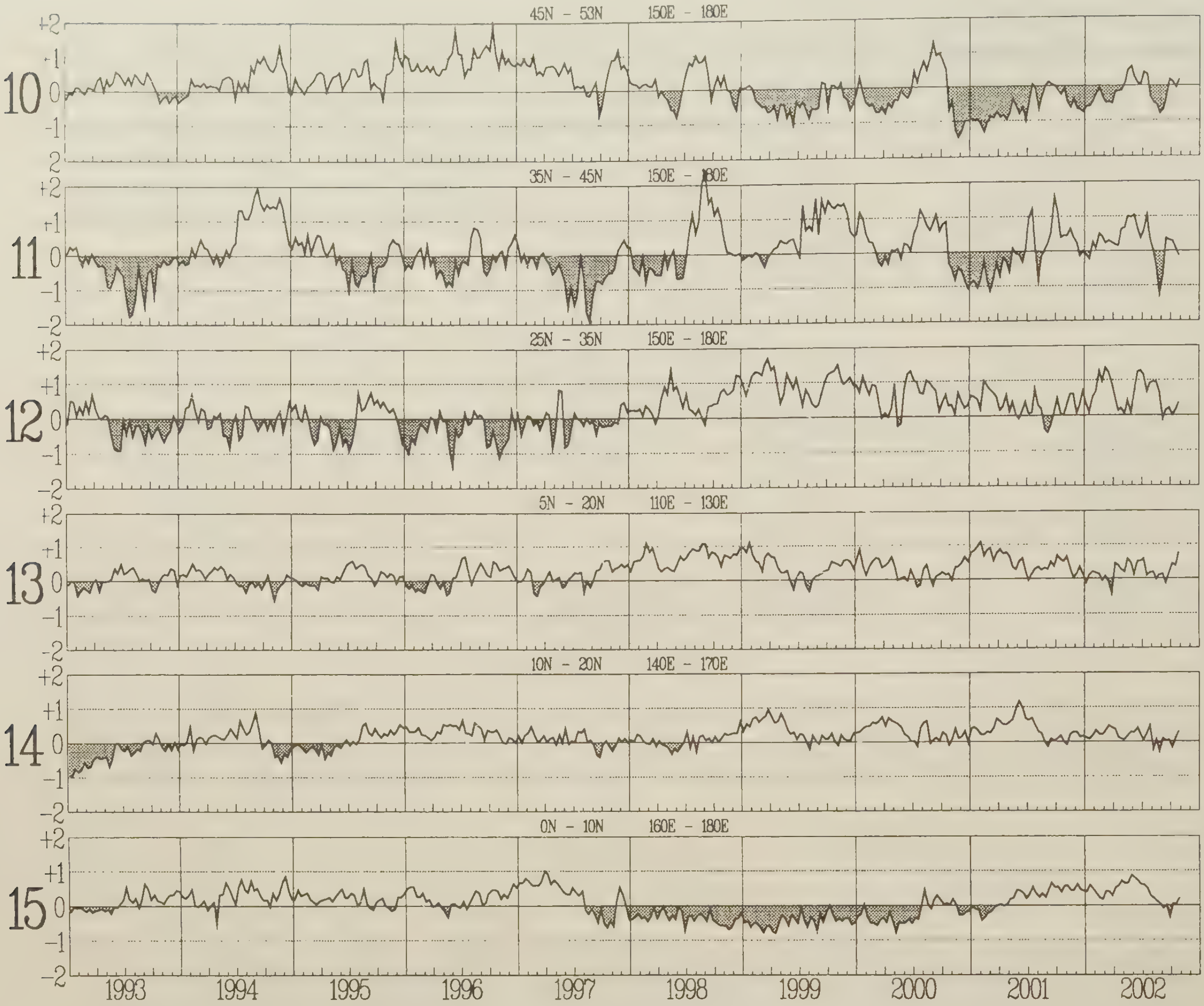


第13図　海域別旬平均海面水温平年偏差時系列図

Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

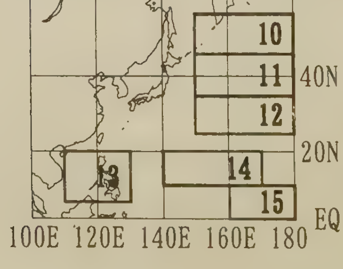


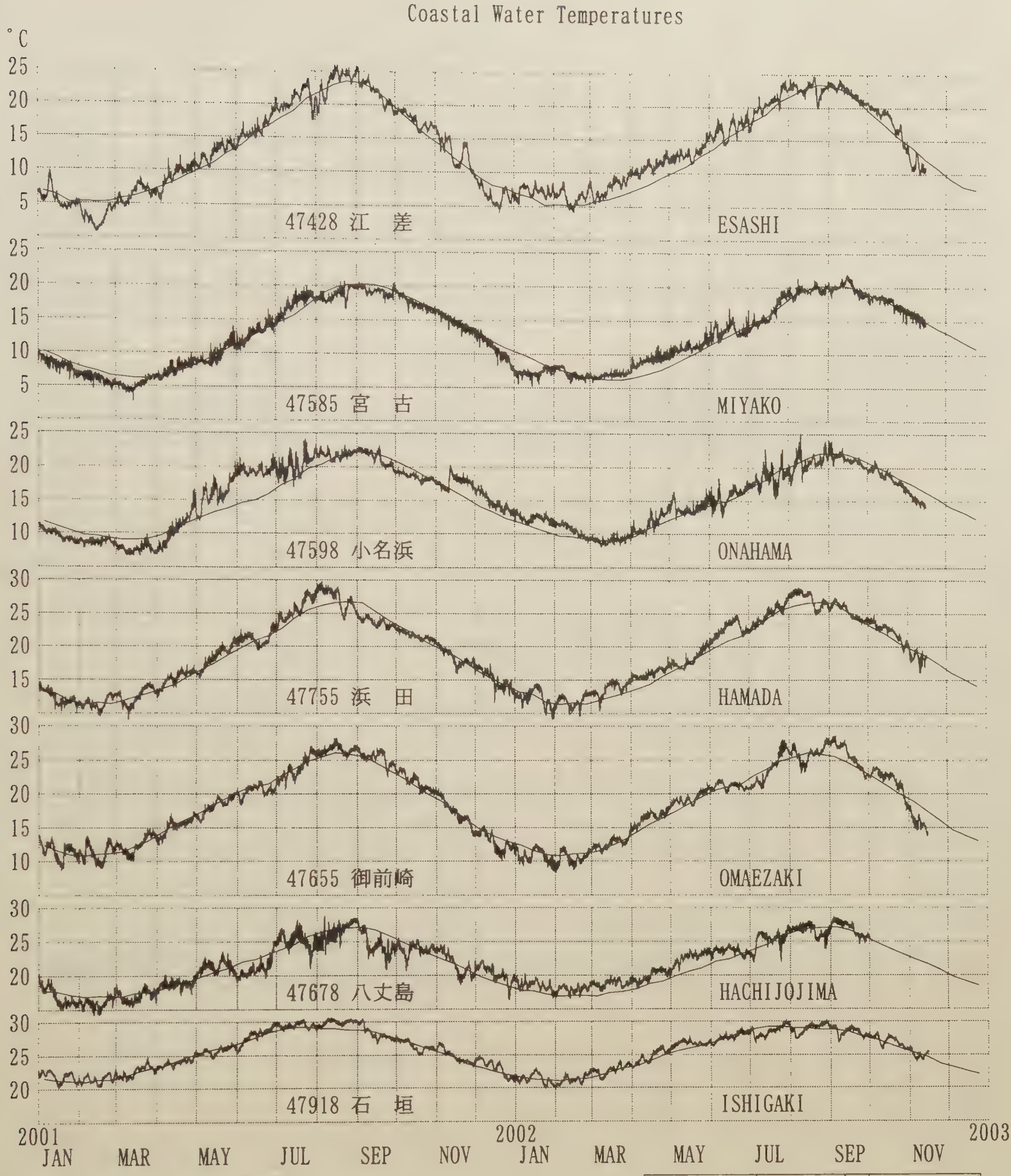
Time Series of Area Mean SST in the Western North Pacific



第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

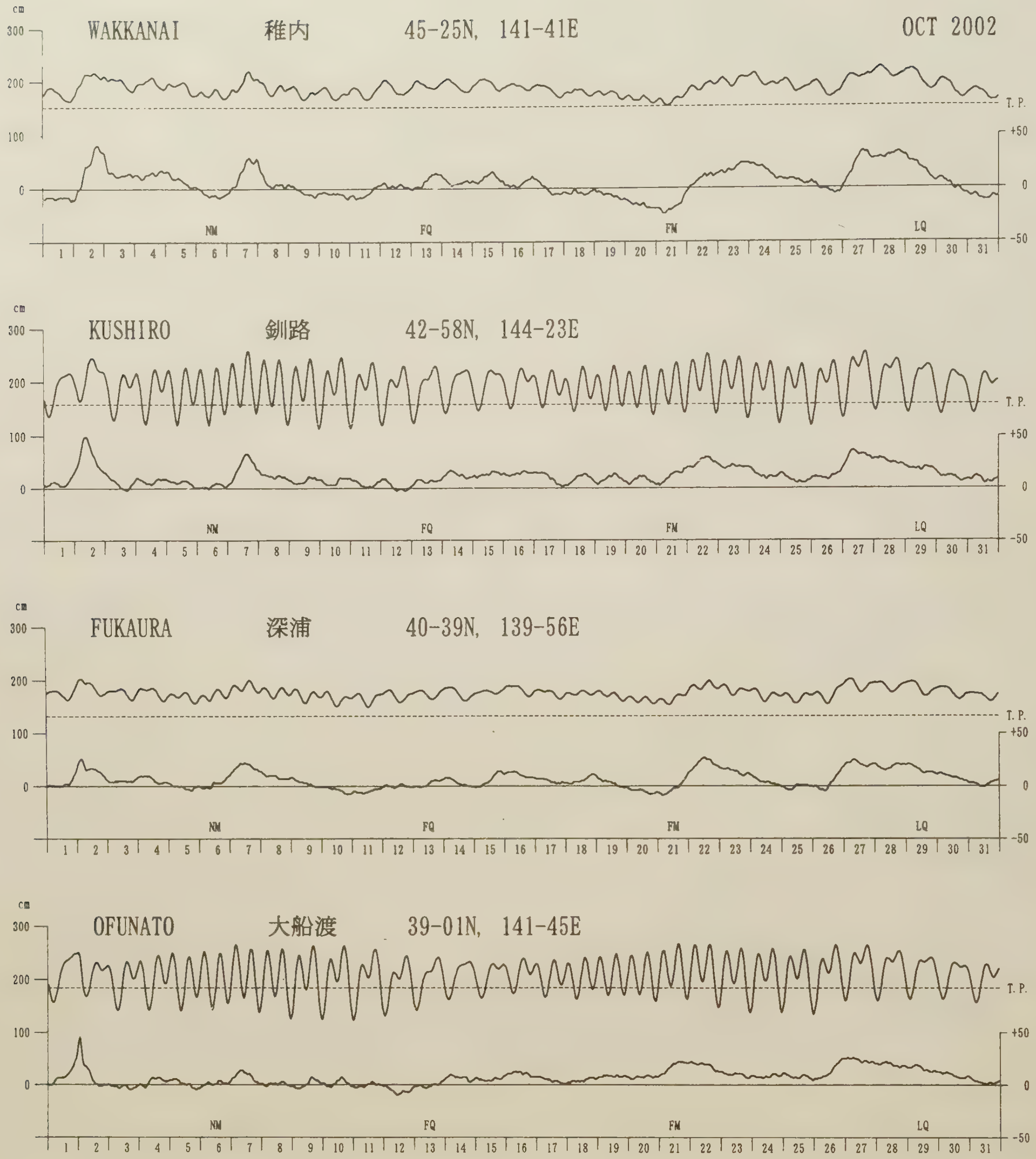






第14図 沿岸水温時系列図

Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.



第15図 沿岸潮位時系列図（2002年10月）

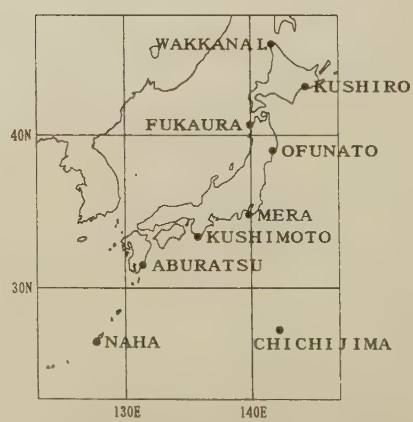
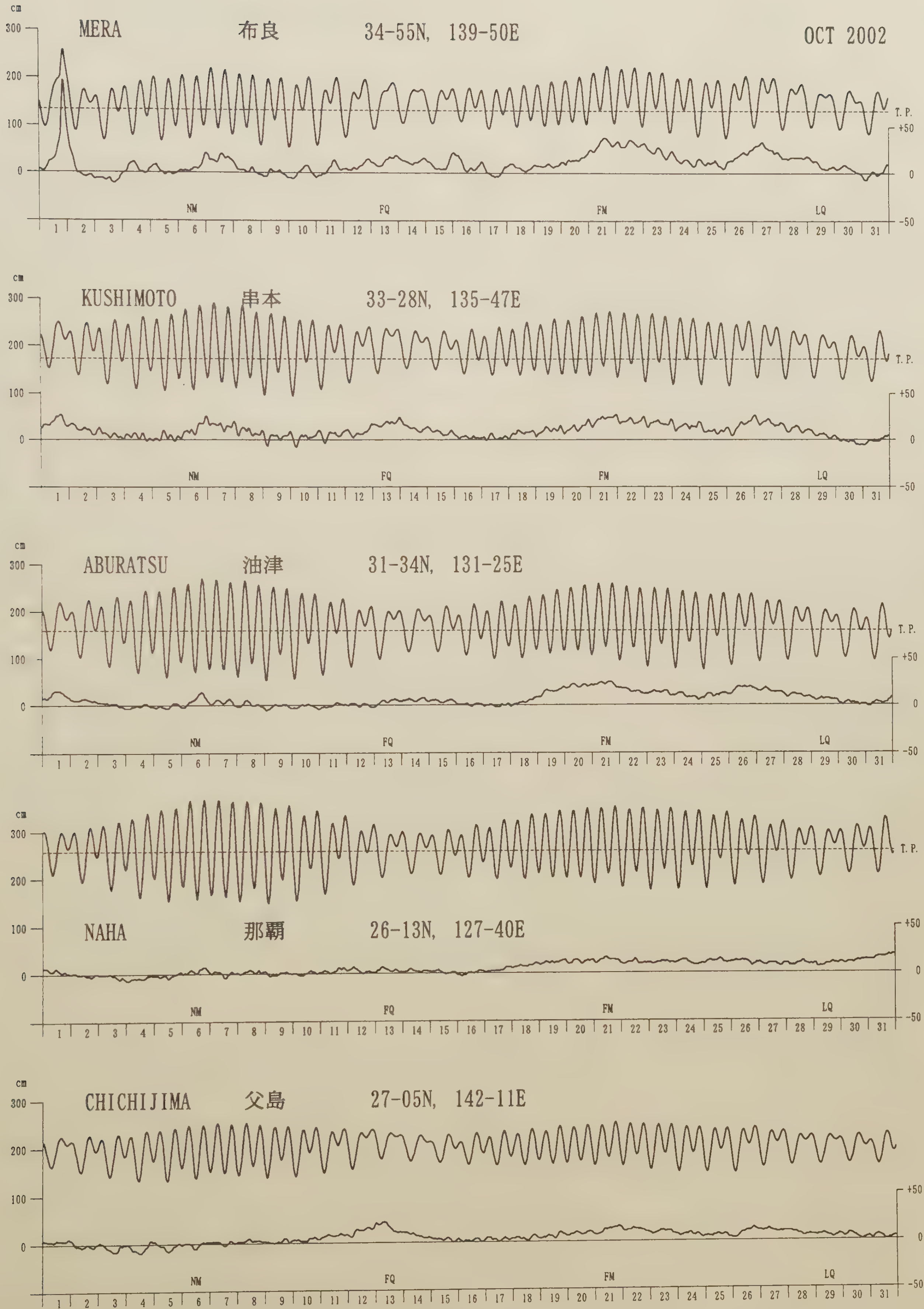


Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

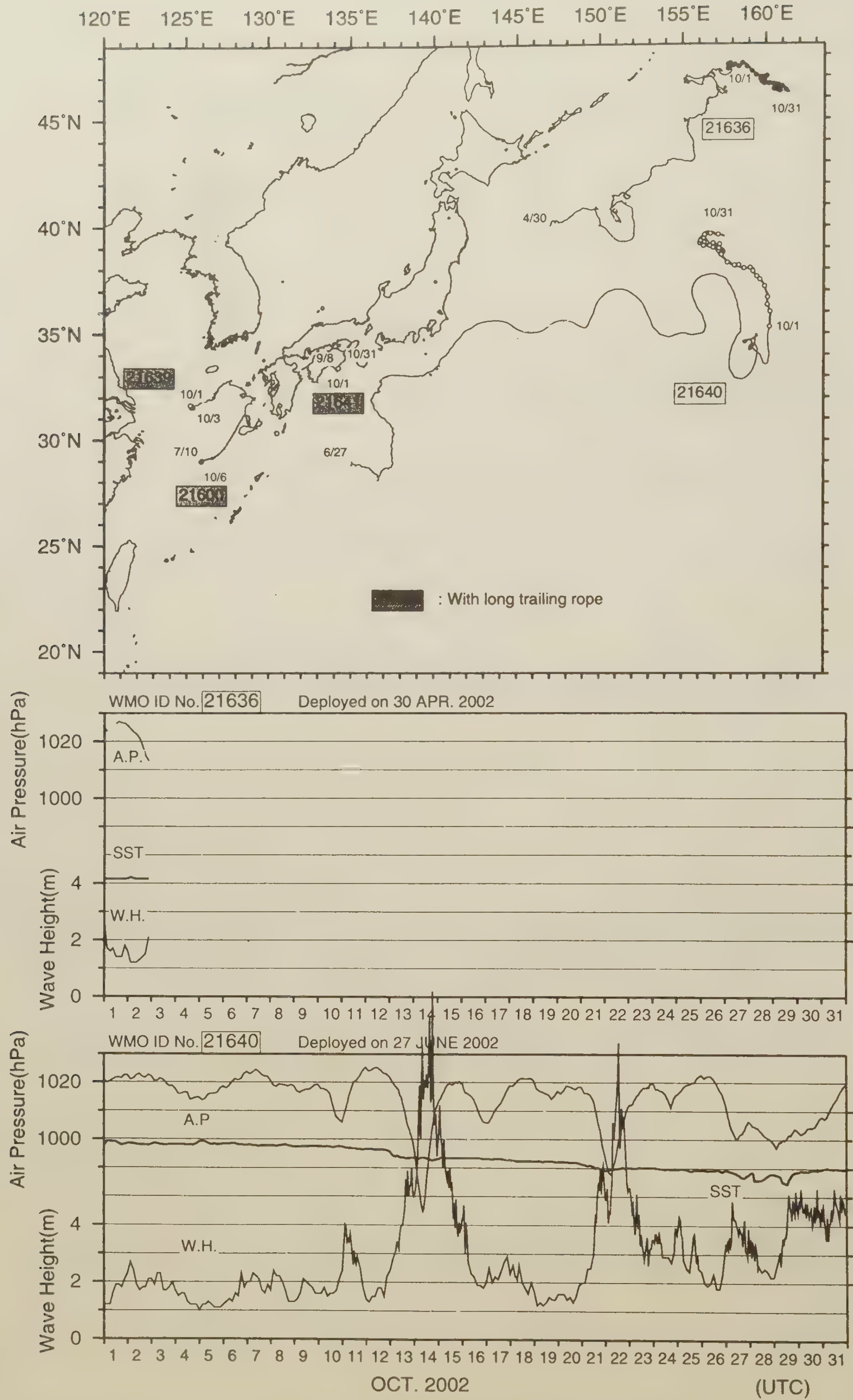
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)

Time series of Sea Level



第15図 つづき

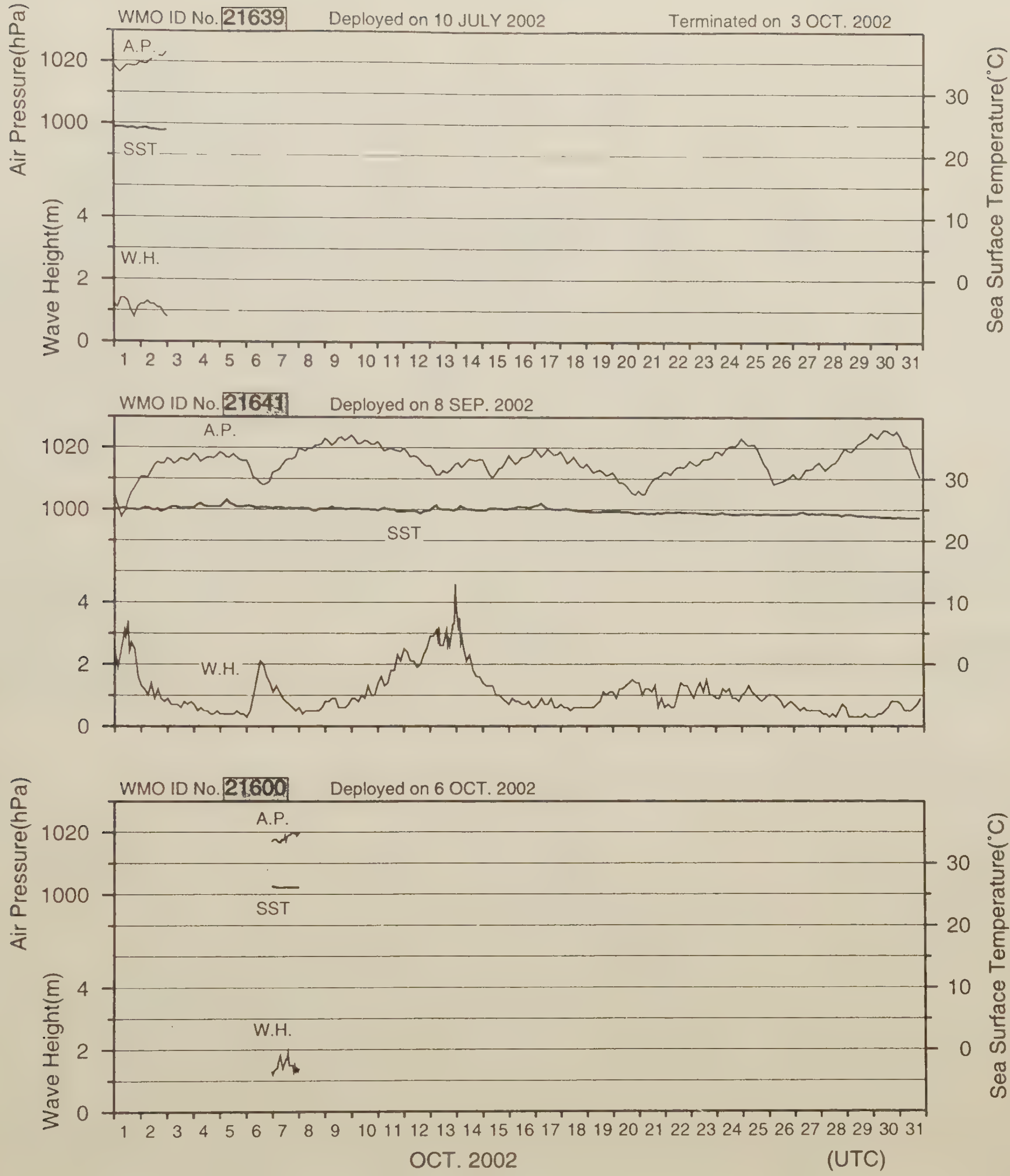
Fig. 15 continue



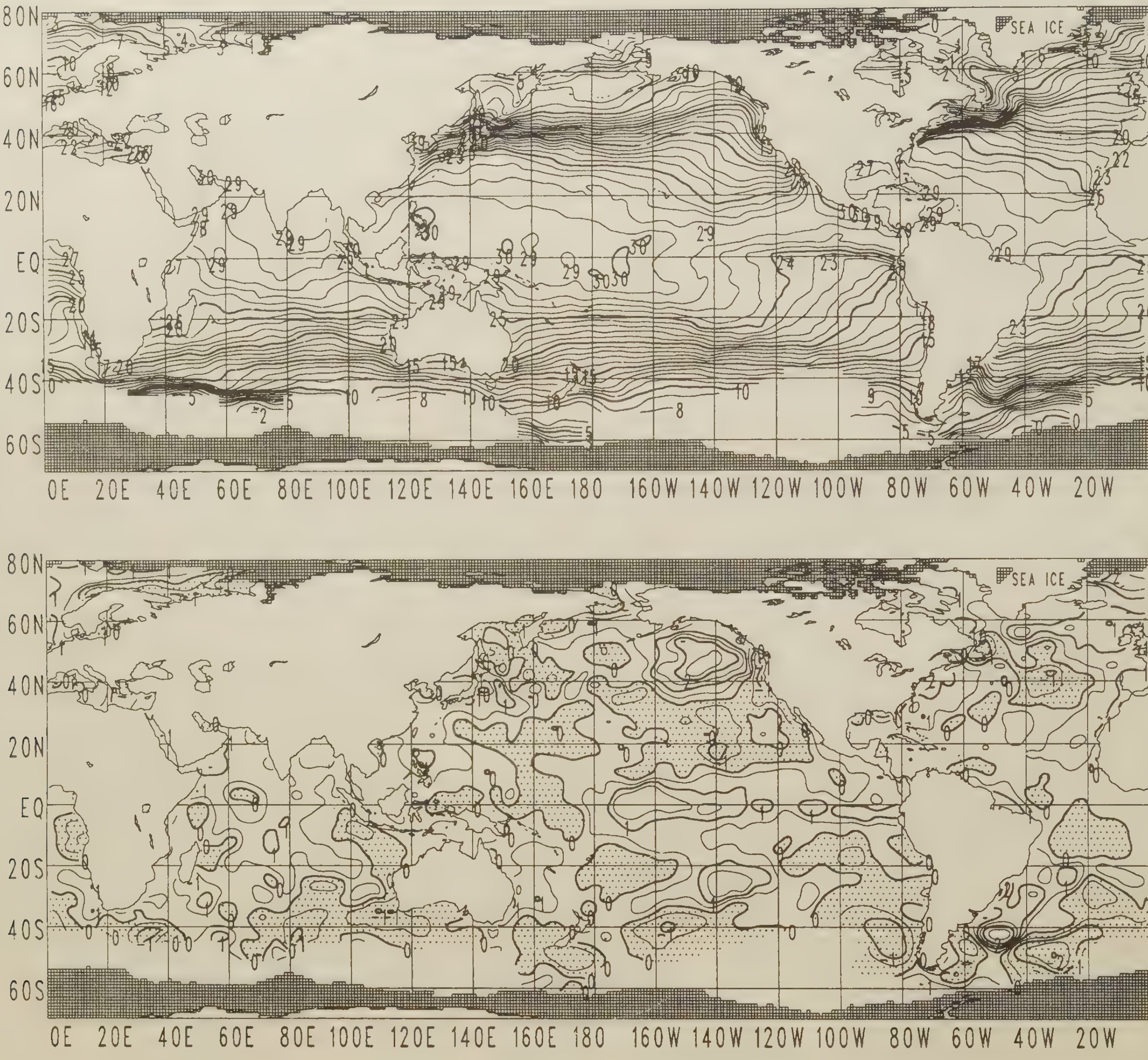
第16図　漂流型海洋気象ブイロボットの軌跡と観測要素の時系列図

Fig.16　Time series of JMA drifting buoy observation.

The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.

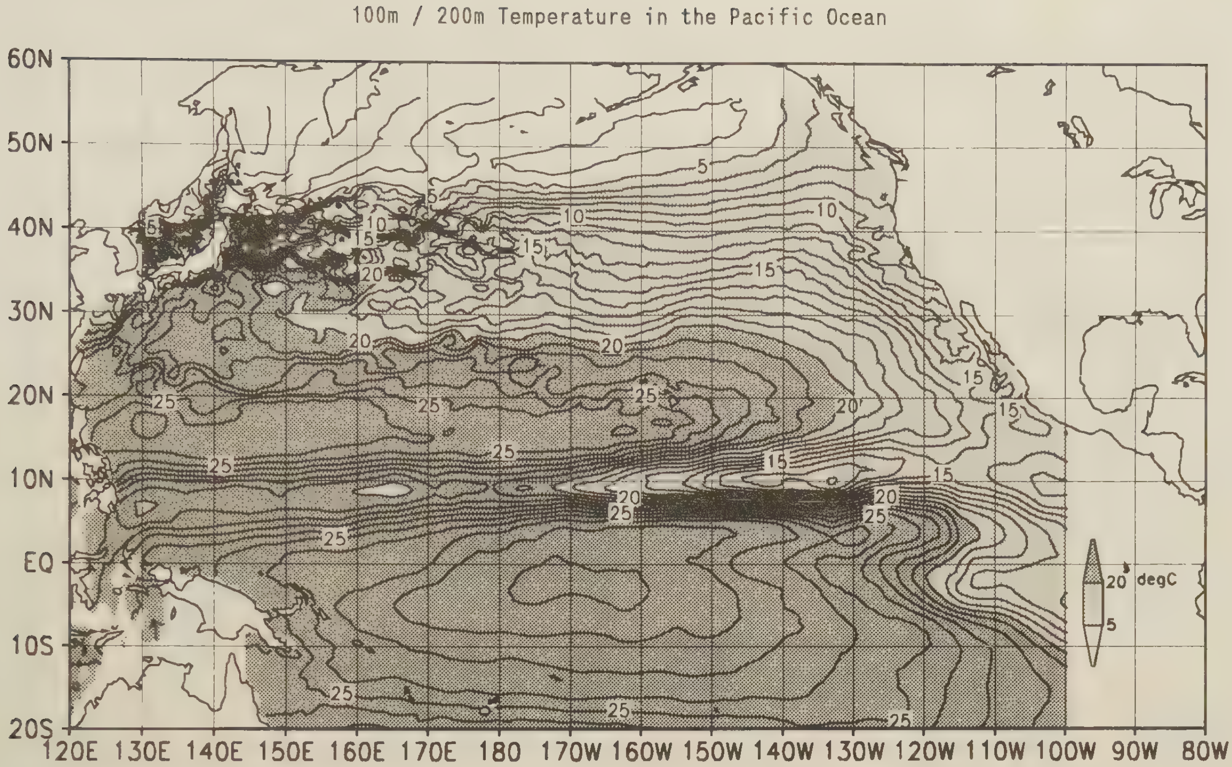


第16図 つづき
Fig.16 continue



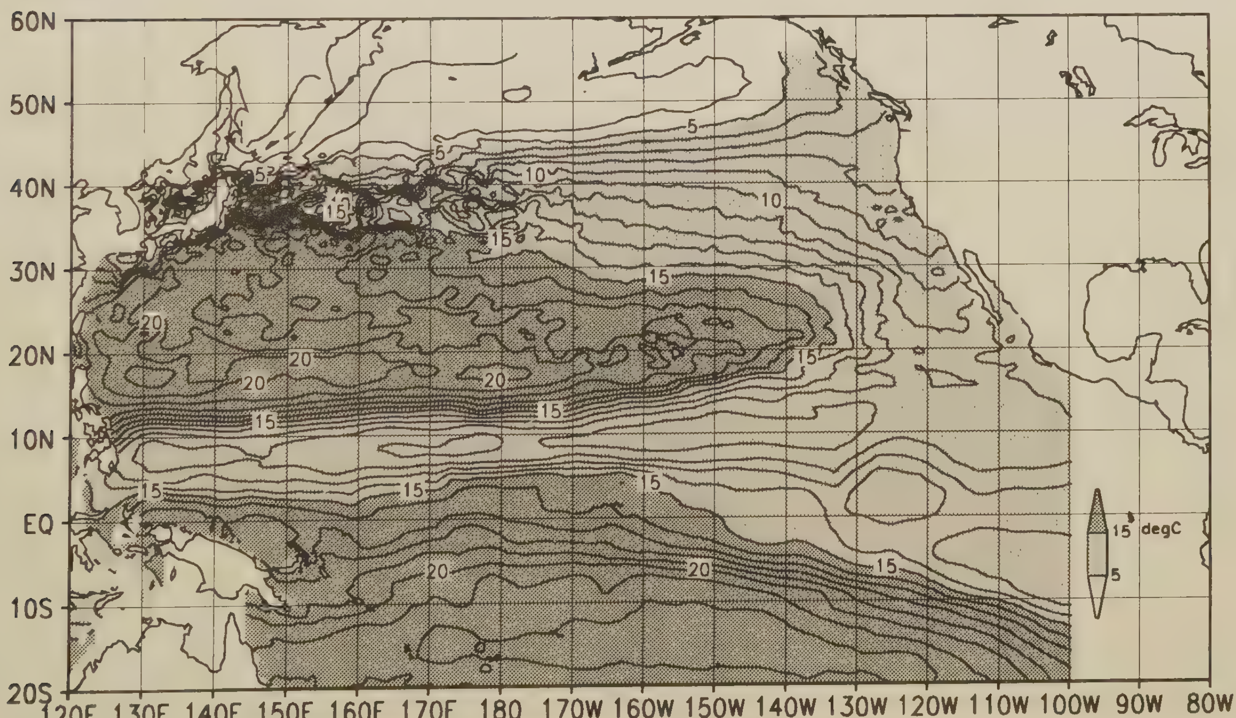
第17図　全球月平均海面水温図（上）及び偏差図（下）（2002年10月）

Fig. 17 Monthly mean SST over the global ocean (top) and anomalies (bottom) for OCT 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



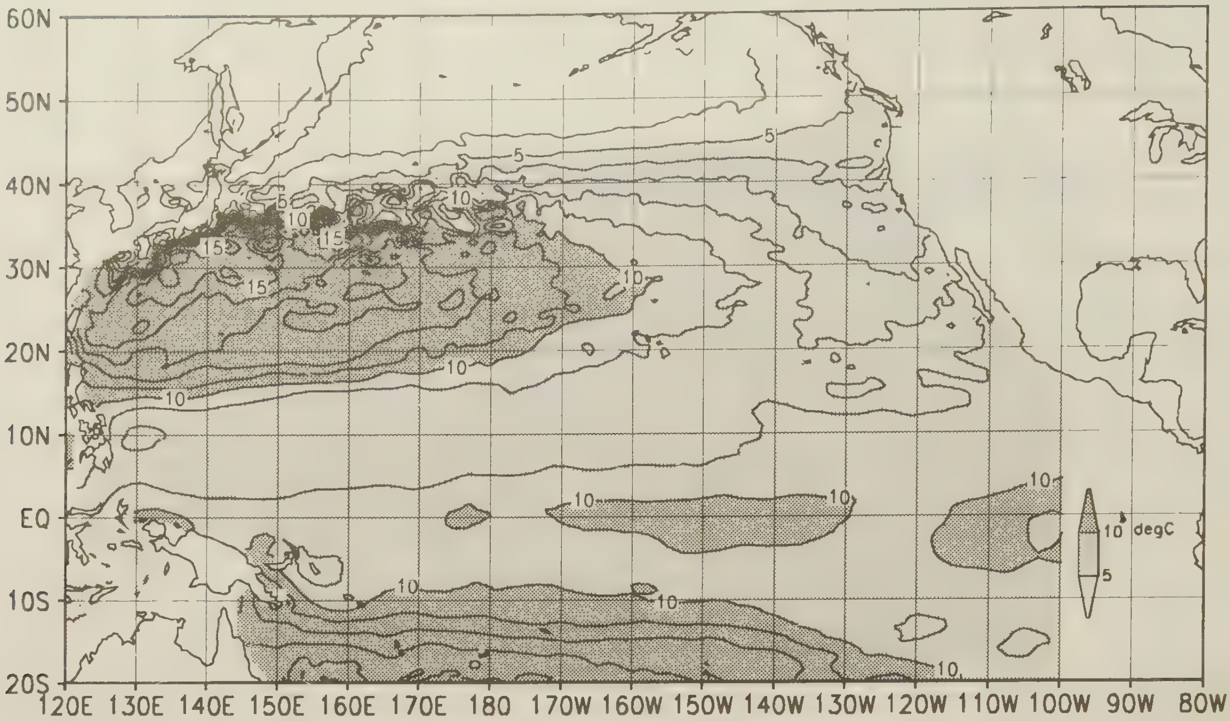
第 18 図　太平洋月平均表層水温図（深さ 100 m）　(2002 年 10 月)
（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for October 2002. Contour interval is 1 ˚C. (calculated by the Ocean Comprehensive Analysis System)



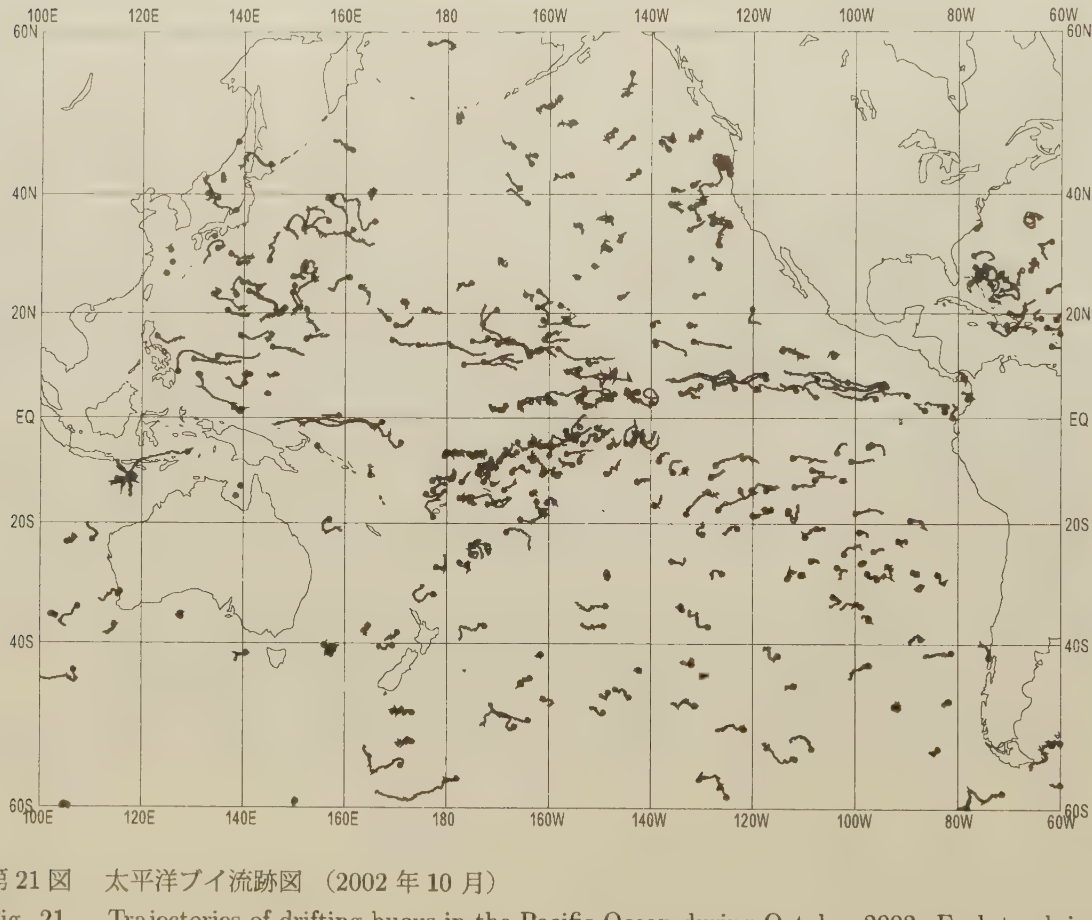
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（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for October 2002. Contour interval is 1 ˚C. (calculated by the Ocean Comprehensive Analysis System)



第 20 図　太平洋月平均表層水温図（深さ 400 m）（2002 年 10 月）
（海洋総合解析システムによる）

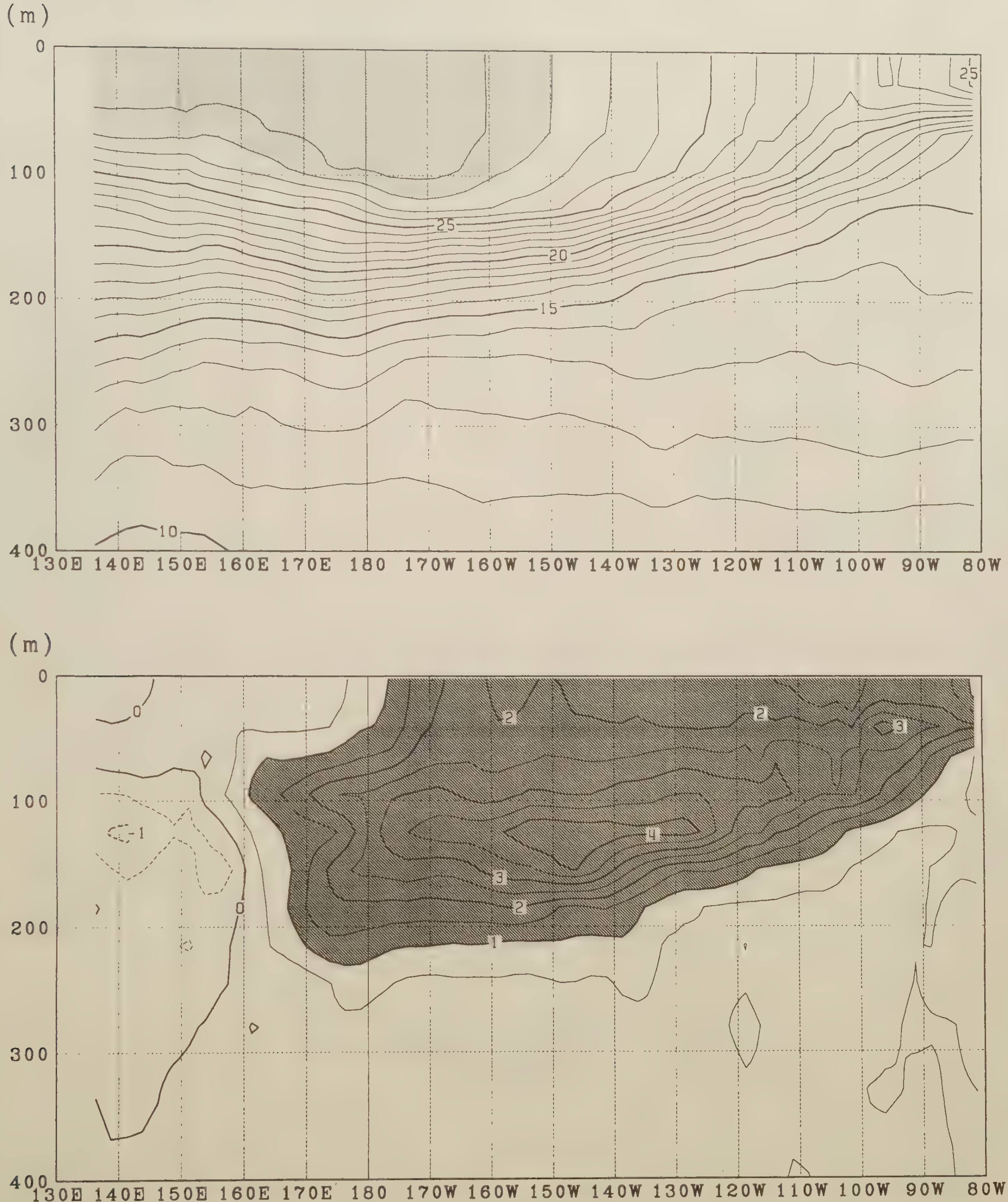
Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for October 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 21 図　太平洋ブイ流跡図（2002 年 10 月）

Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during October 2002. Each track is for one buoy. Small circles represent the last positions for the month.

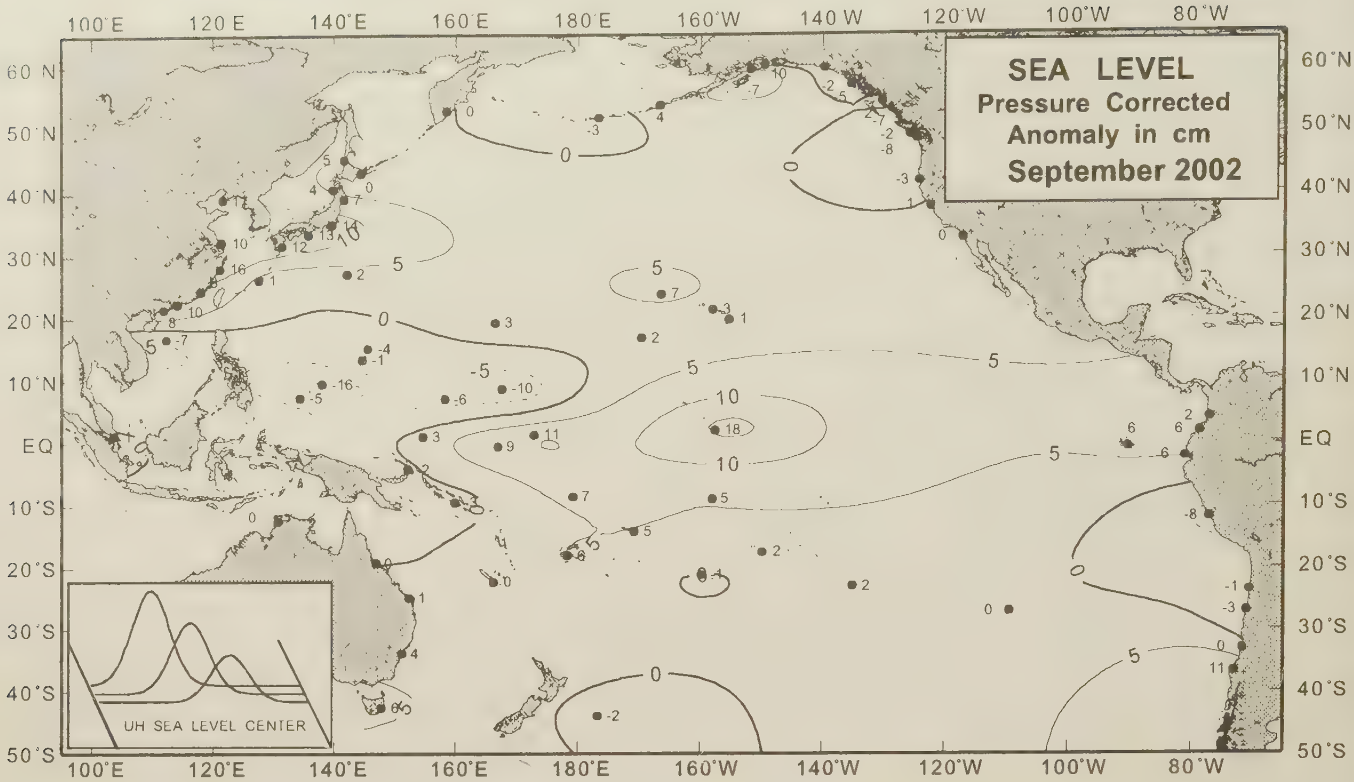
Depth-Longitude Sections of Equatorial Temperature & Anomalies



第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2002年10月）

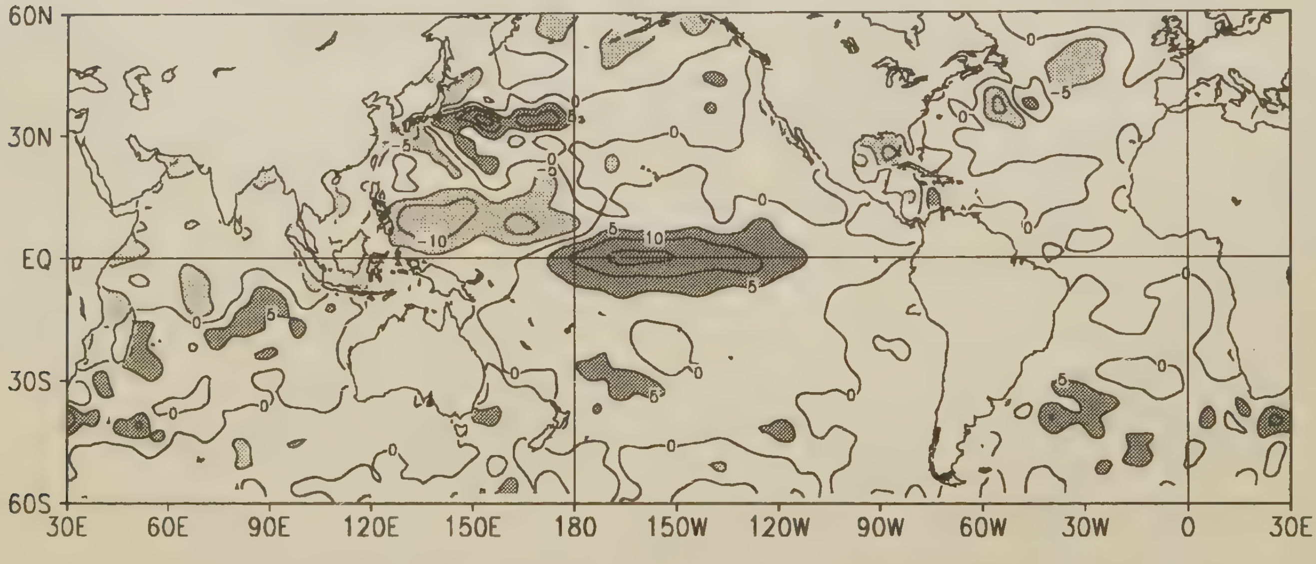
Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for OCT 2002. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2001 base period means.

Sea Level Anomalies / Sea Surface Height Anomalies



第 23 図　太平洋月平均海面水位偏差図 （2002 年 9 月）

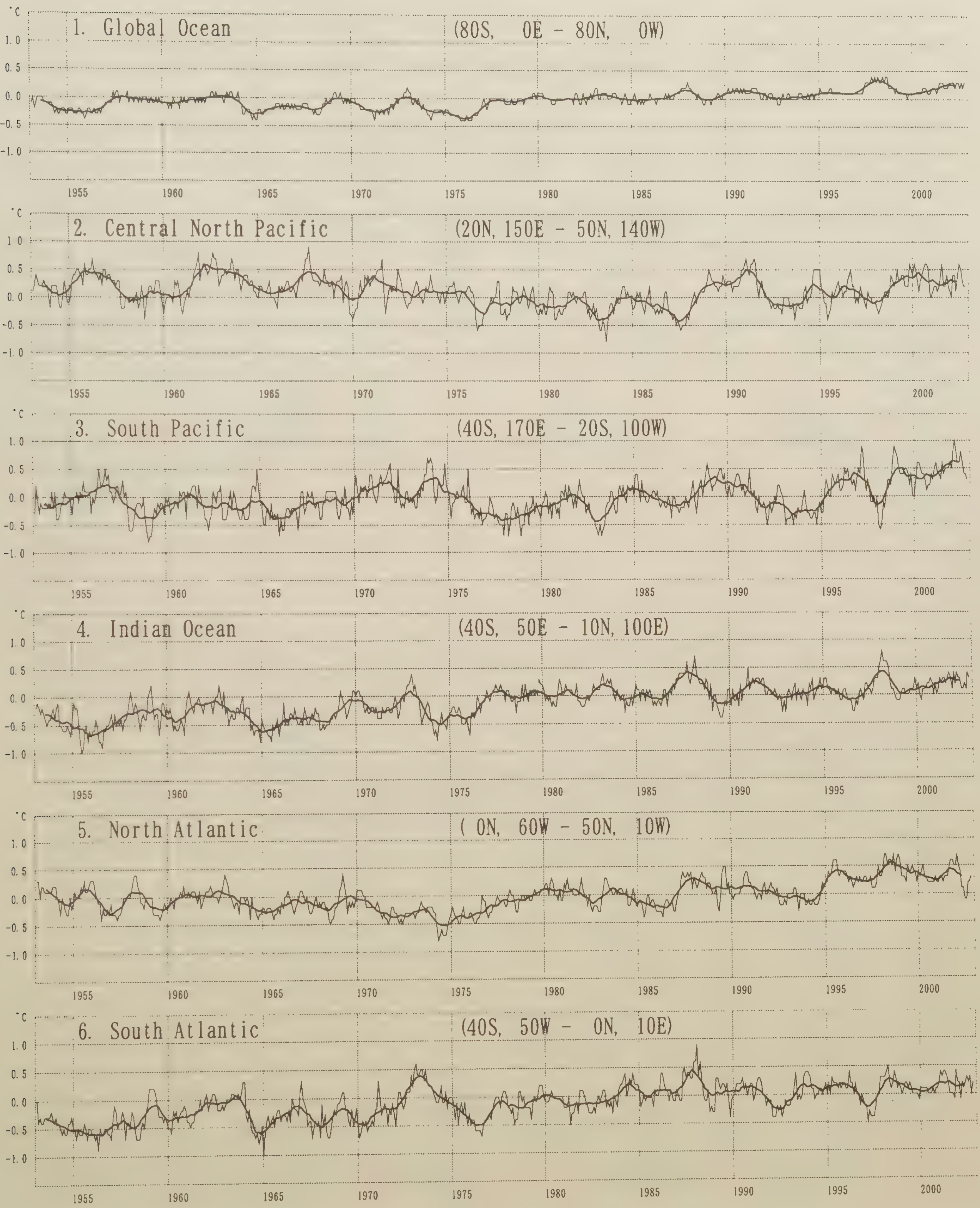
Fig. 23　Monthly sea level anomalies for September 2002 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 （2002 年 9 月）

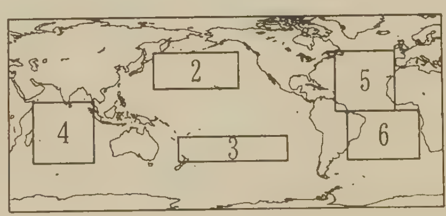
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of Jason-1 for September 2002. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

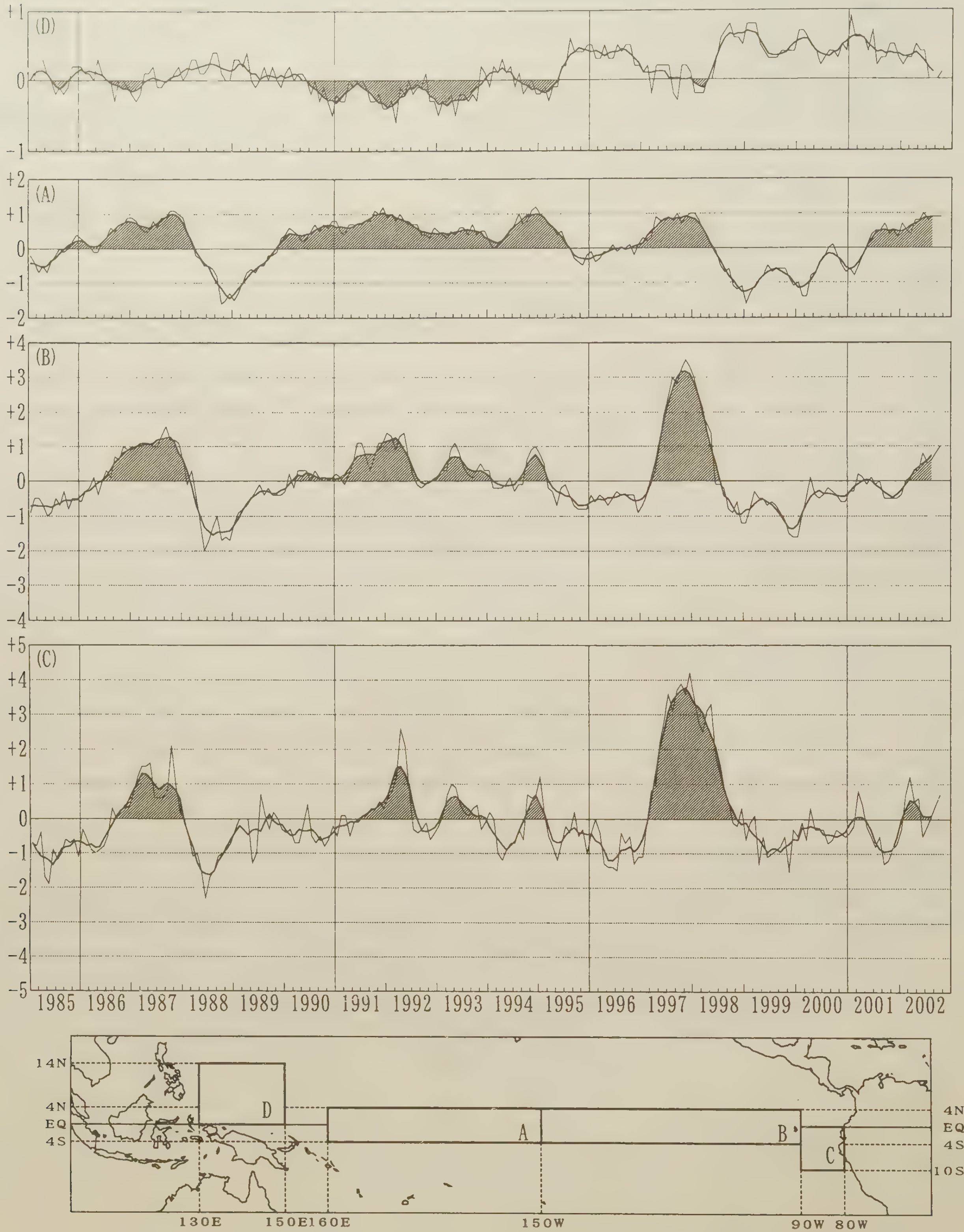


第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Tropical Pacific SST Anomalies



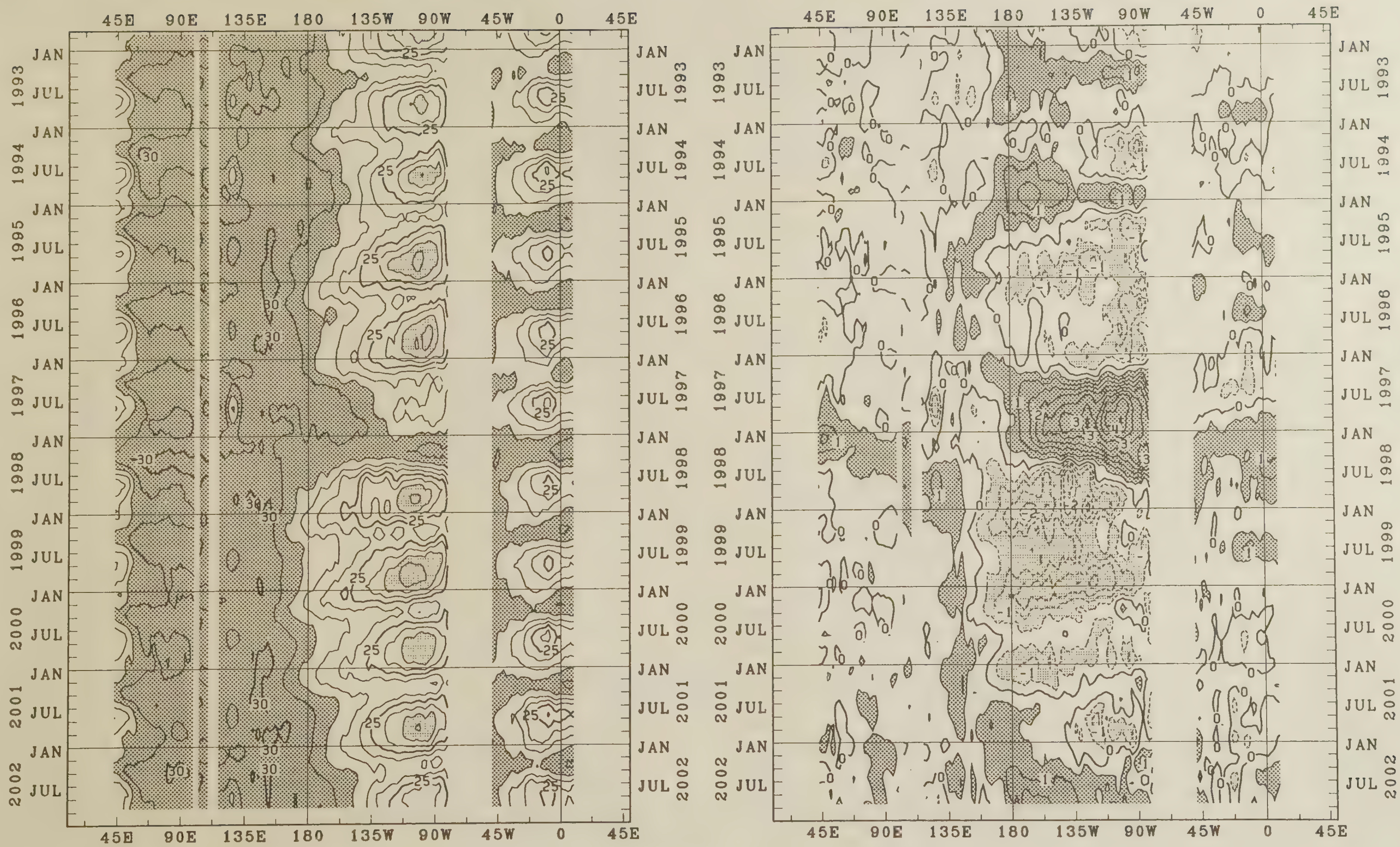
第26図　太平洋熱帯域の海面水温偏差時系列図

Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel.
Thin lines show the monthly means and thick lines their 5-month running means.　Positive anomalies (A, B, C) and negative anomalies (D) are shaded.　Anomalies are computed from the JMA climatology (1971-2000).

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 00	29.2	0.7	27.0	-1.0	23.8	-1.6	24.0	-0.5	0.5	1.2	0.1
FEB 00	29.0	0.7	26.6	-1.4	25.3	-1.0	25.9	-0.1	1.1	2.6	-0.3
MAR 00	29.1	0.6	26.7	-1.4	26.6	-0.5	25.7	-0.6	1.1	1.6	-0.6
APR 00	29.3	0.5	27.4	-0.8	27.3	0.1	25.7	0.3	1.3	1.0	-1.1
MAY 00	29.7	0.4	27.9	-0.7	26.5	-0.4	24.0	-0.3	0.3	0.8	0.4
JUN 00	29.6	0.2	28.1	-0.4	25.7	-0.5	22.6	-0.3	-0.3	0.3	0.8
JUL 00	29.6	0.3	28.2	-0.3	25.0	-0.4	21.6	-0.3	-0.3	-0.5	0.0
AUG 00	29.6	0.4	28.4	0.0	24.5	-0.2	20.2	-0.7	0.6	0.2	-0.9
SEP 00	29.7	0.4	28.5	0.1	24.4	-0.3	19.9	-0.6	0.9	1.5	-0.2
OCT 00	29.7	0.3	28.2	-0.2	24.3	-0.4	20.6	-0.3	1.0	0.3	-1.5
NOV 00	29.8	0.5	27.9	-0.5	24.1	-0.6	21.4	-0.4	1.8	1.2	-2.3
DEC 00	29.4	0.4	27.5	-0.7	24.4	-0.6	22.4	-0.5	0.9	-0.9	-2.6
JAN 01	29.4	0.9	27.4	-0.6	25.1	-0.3	24.1	-0.4	0.8	2.5	0.6
FEB 01	28.9	0.6	27.2	-0.8	26.0	-0.3	25.8	-0.2	1.0	-0.4	-3.2
MAR 01	29.1	0.6	27.6	-0.5	27.3	0.2	27.1	0.8	0.8	1.3	-0.2
APR 01	29.4	0.6	28.0	-0.2	27.3	0.1	25.8	0.4	0.1	-0.1	-0.3
MAY 01	29.7	0.4	28.7	0.1	26.8	-0.1	24.1	-0.2	-0.7	-0.2	0.9
JUN 01	30.1	0.7	28.9	0.4	26.3	0.1	22.4	-0.5	0.2	-0.2	-0.5
JUL 01	29.5	0.2	29.0	0.5	25.3	-0.1	21.1	-0.8	-0.2	-0.1	0.3
AUG 01	29.5	0.3	28.9	0.5	24.7	0.0	20.4	-0.5	-0.7	-0.9	0.1
SEP 01	29.6	0.3	29.1	0.7	24.2	-0.5	19.2	-1.3	0.1	-0.2	-0.4
OCT 01	29.9	0.5	28.8	0.4	24.2	-0.5	19.7	-1.2	-0.1	-0.9	-0.9
NOV 01	29.8	0.5	28.9	0.5	24.2	-0.5	20.9	-0.9	0.6	0.7	-0.4
DEC 01	29.3	0.3	28.5	0.3	24.5	-0.5	22.2	-0.7	-0.8	-1.2	0.3
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0
APR 02	29.3	0.5	29.0	0.8	27.5	0.3	25.9	0.5	-0.1	0.1	0.3
MAY 02	29.7	0.4	29.4	0.8	27.2	0.3	24.9	0.6	-1.3	-1.1	0.7
JUN 02	29.8	0.4	29.5	1.0	27.0	0.8	22.4	-0.5	-0.4	-0.2	0.4
JUL 02	29.3	0.0	29.3	0.8	25.9	0.5	21.7	-0.2	-0.7	0.5	1.6
AUG 02	29.2	0.0	29.3	0.9	25.3	0.6	21.0	0.1	-1.2	-1.4	0.5
SEP 02	29.3	0.0	29.3	0.9	25.5	0.8	20.9	0.4	-0.5	-0.3	0.8
OCT 02	29.5	0.1	29.3	0.9	25.7	1.0	21.6	0.7	-0.5	-1.0	-0.3

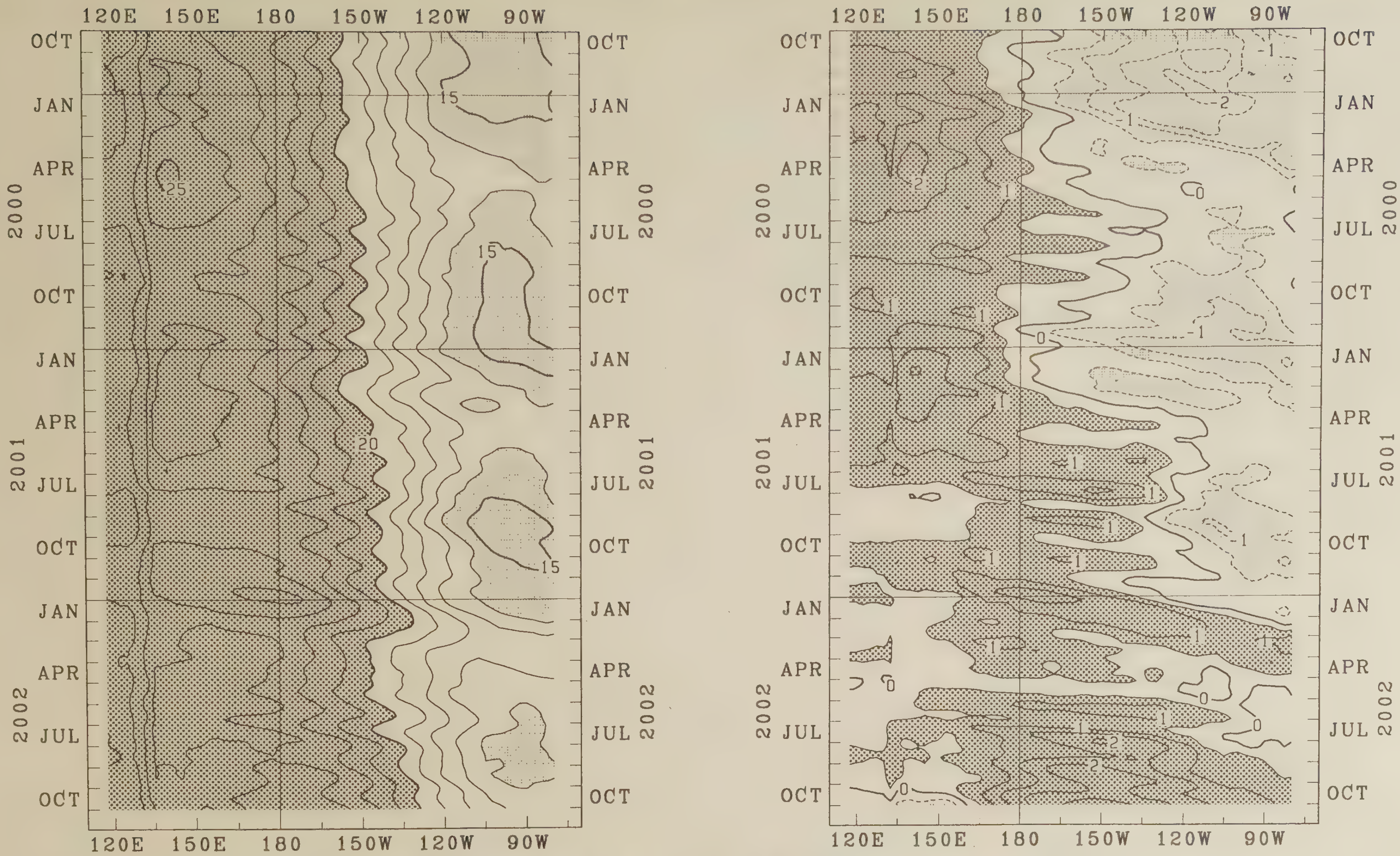
第1表　太平洋熱帯域の大気及び海洋の監視指数

Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean



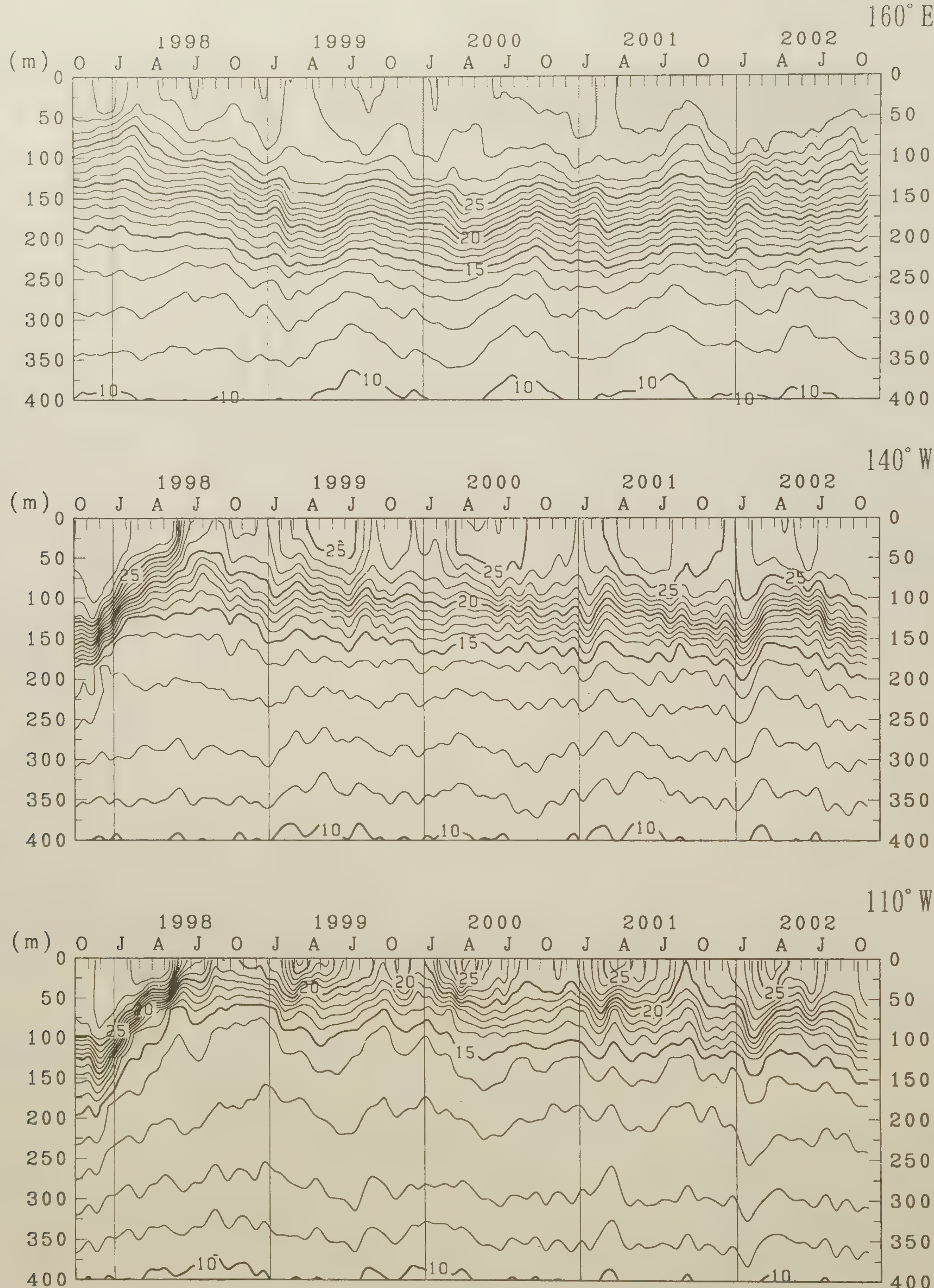
第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.



第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28 Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2001 base period means.



第29図　太平洋赤道域の表層水温の時間－深度断面図

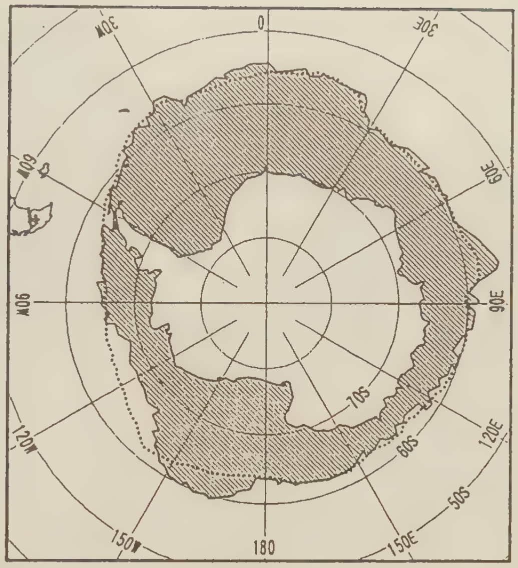
（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.



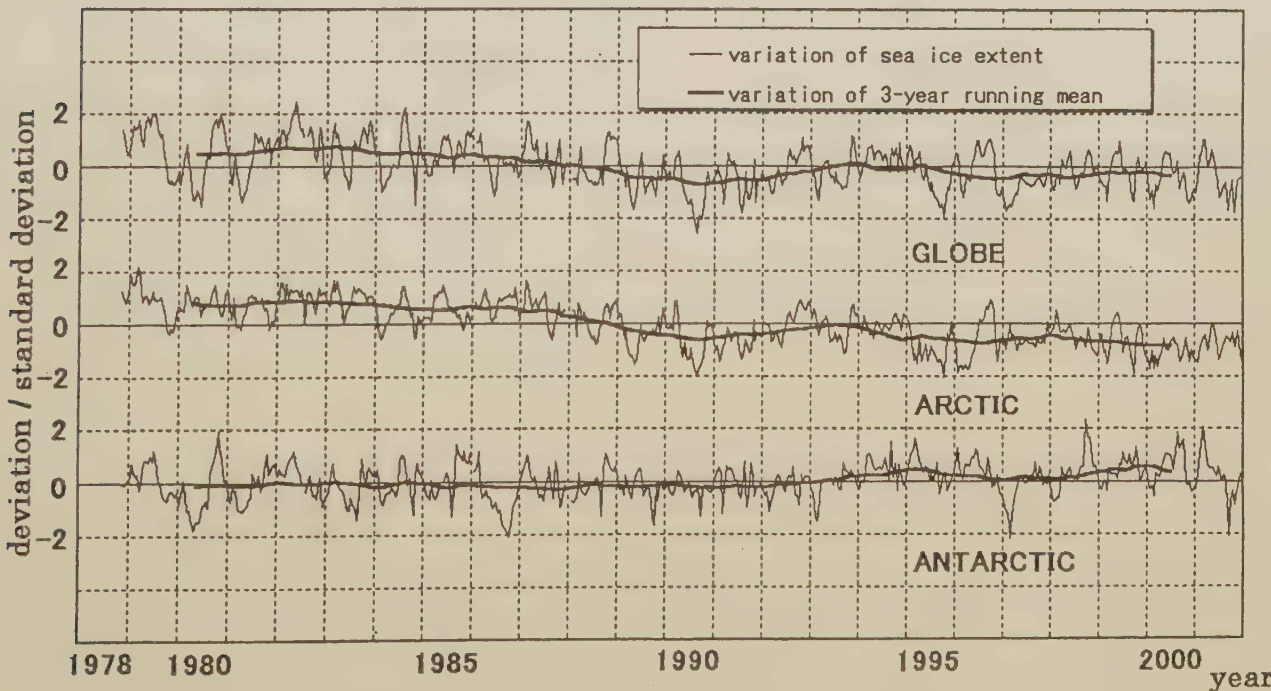
第30-1図　北極域の海氷図（2002年10月18日）

Fig.30-1 Sea ice chart in the Arctic on 18 Oct. 2002.
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.
The data source is the National Ice Center (USA).



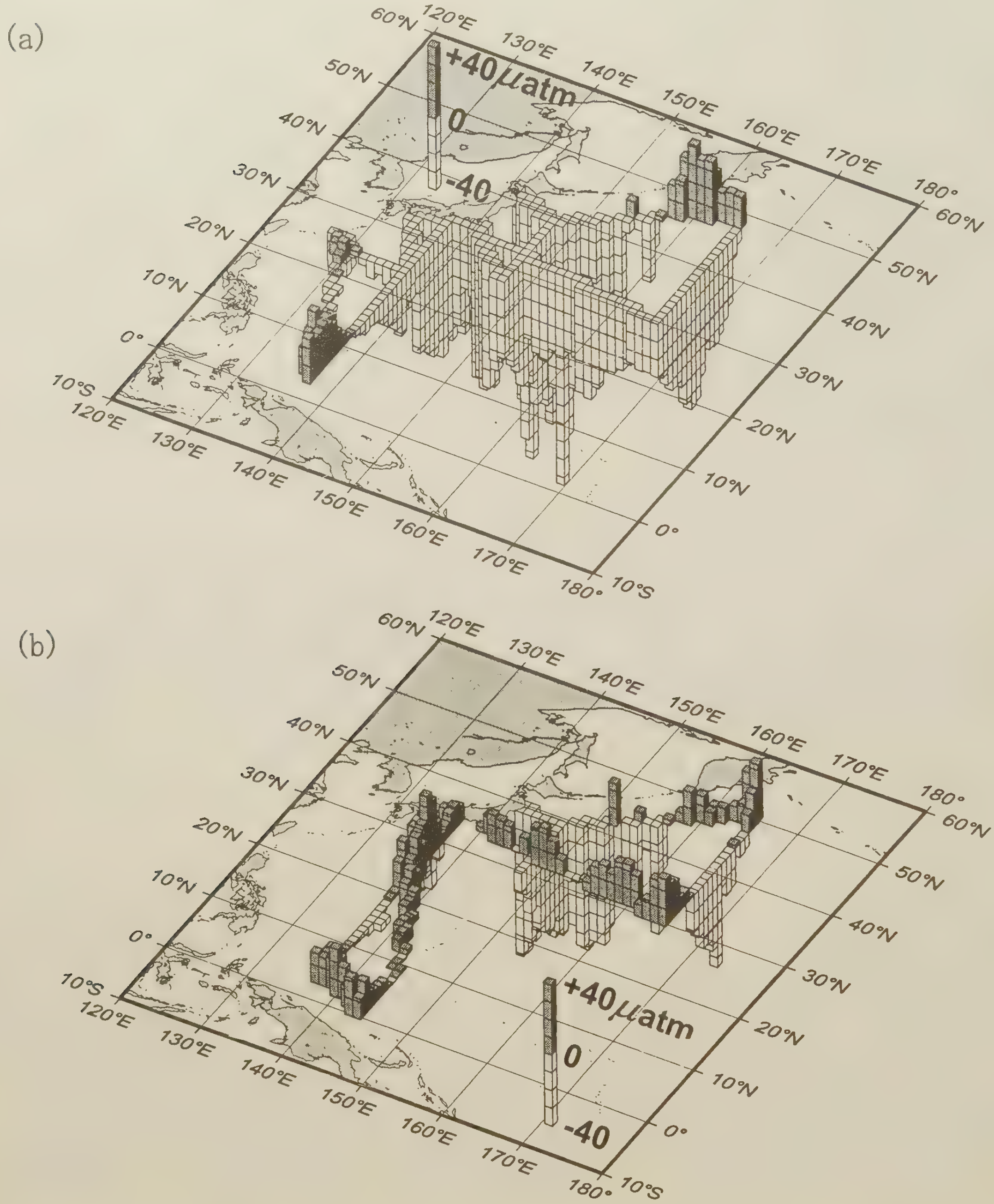
第30-2図　南極域の海氷図（2002年10月18日）

Fig.30-2 Sea ice chart in the Antarctic on 18 Oct. 2002.
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.
The data source is the National Ice Center (USA).



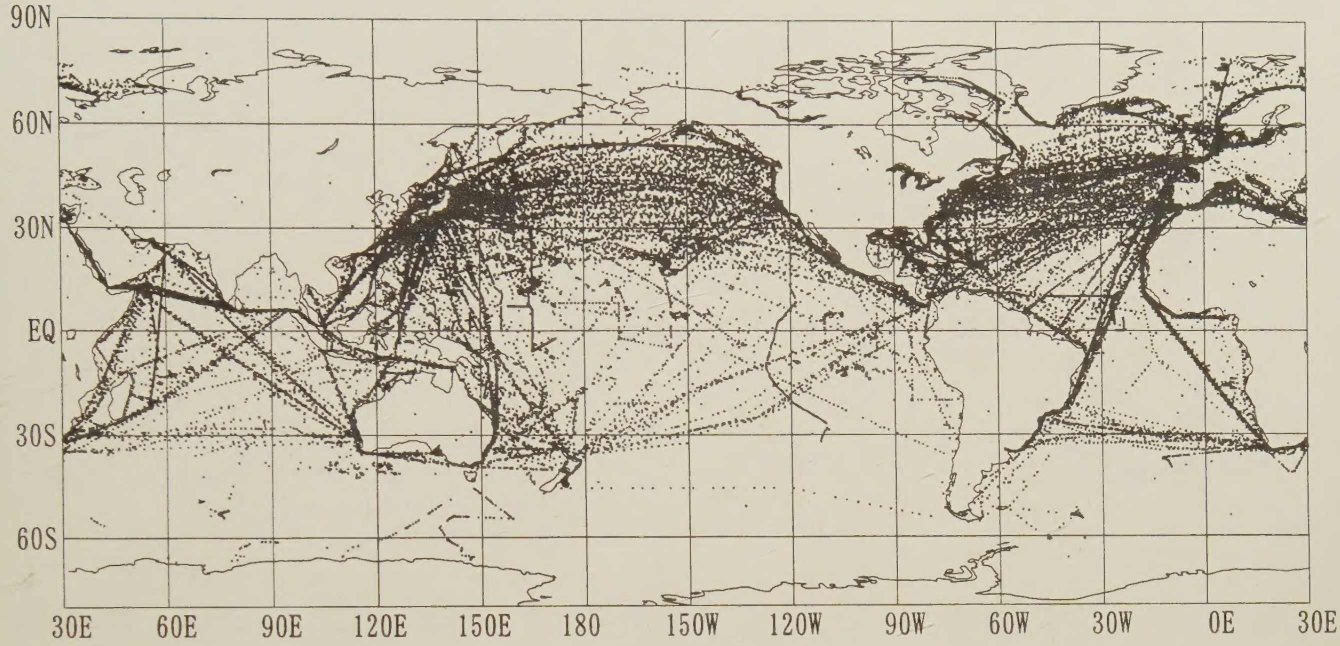
第30-3図 全球、北極及び南極における海氷域面積の偏差（平年差／標準偏差）の時系列図
資料は米国雪氷データセンター提供のSSM/Iデータによる

Fig.30-3 Time series of the normalized deviation (deviation from normal / standard deviation) of the Global, the Arctic and the Antarctic sea ice extent (Based on SSM/I data by National Snow and Ice Data Center,USA).

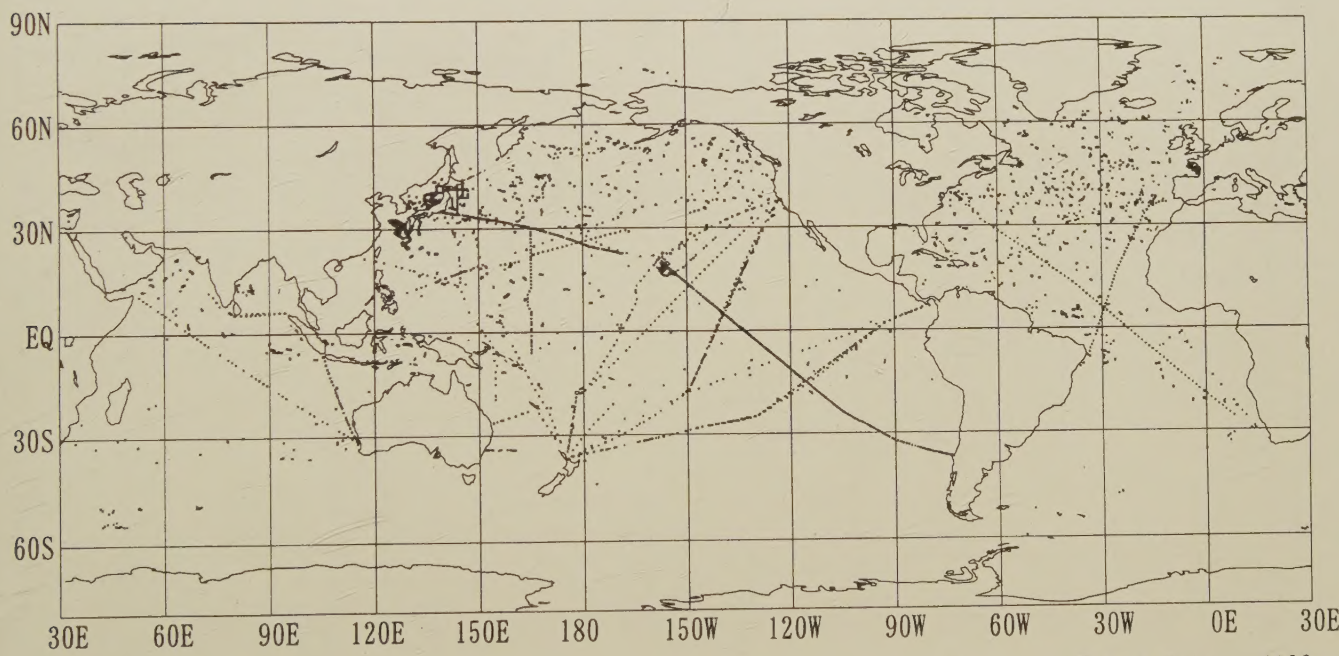


第31図　気象庁「凌風丸」及び神戸海洋気象台「啓風丸」が、(a)2002年4月27日から5月31日にかけて、(b)2002年6月25日から7月31日にかけて北西太平洋で観測した洋上大気中と表面海水中のCO_2の濃度差。棒グラフは、海洋から大気へCO_2を放出する場合を濃い陰影、海洋が大気のCO_2を吸収する場合を薄い陰影に示してある。

Fig. 31 Difference in the CO_2 concentration between the surface water and the overlying atmosphere in the western North Pacific observed by the R/V Ryofu Maru of JMA and the R/V Keifu Maru of KMO, (a) from April 27 to May 31, 2002, (b) from June 25 to July 31, 2002. Darker-shaded upward pillars indicate that the oceanic CO_2 was emitted into the atmosphere, and lighter-shaded downward pillars indicate that the atmospheric CO_2 was absorbed into the ocean, respectively.



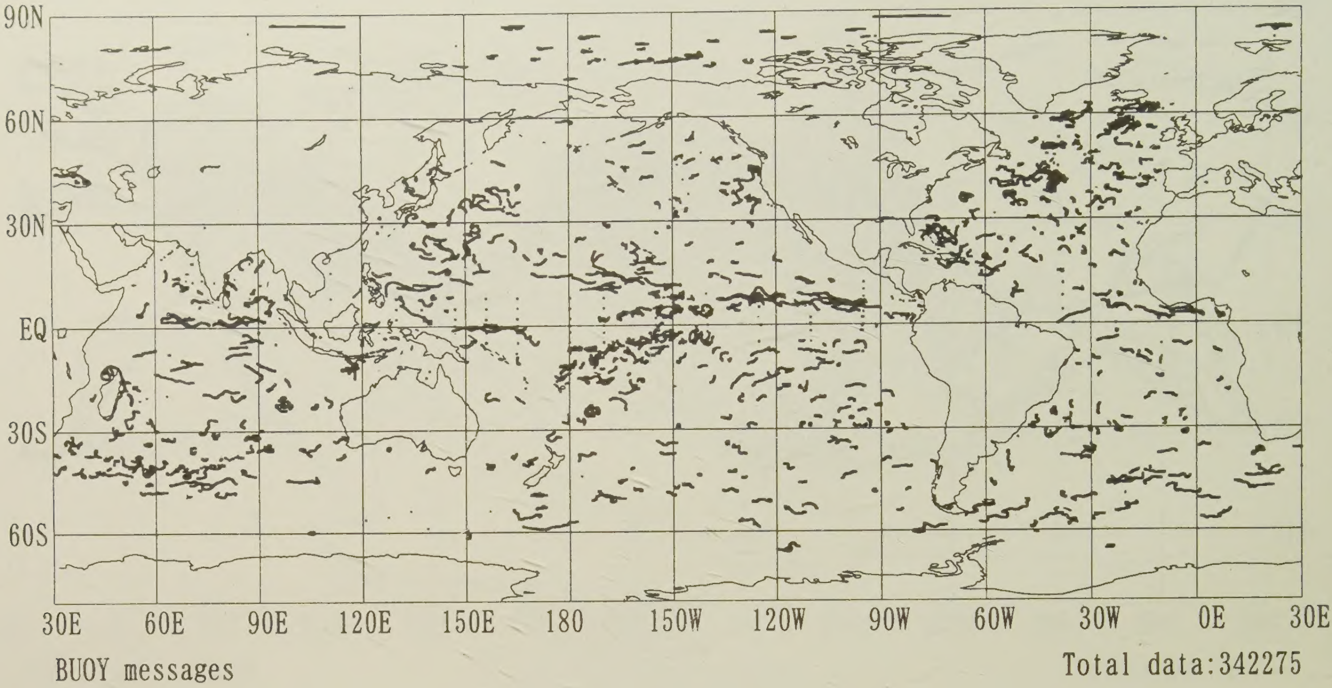
SHIP messages Total data:175009

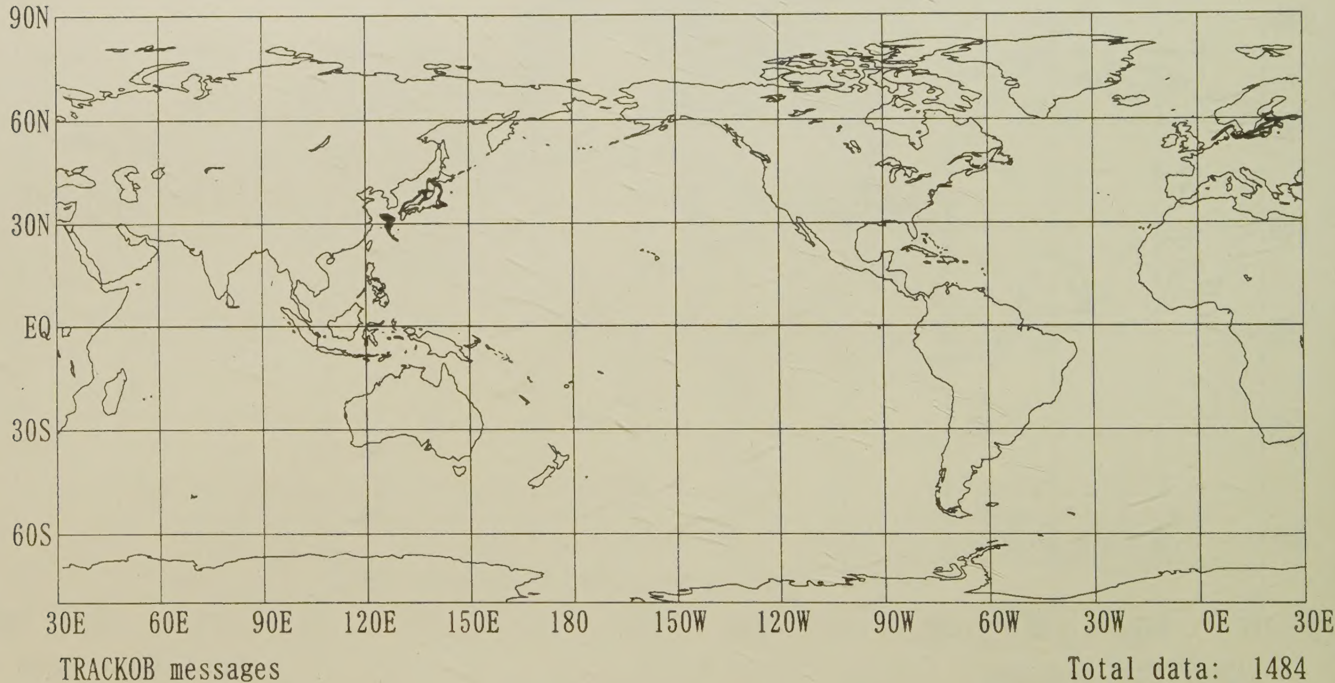


BATHY/TESAC messages Total data: 4100

第32-1図　測点分布図(2002年10月)

Fig. 32-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for OCT 2002.





第32-2図　測点分布図(2002年10月)

Fig. 32-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for OCT 2002.

気 象 庁 海 洋 月 報

Monthly Ocean Report

October 2002 (No. 118)

本月報掲載の 2002 年 10 月のプロダクトには、気象庁が観測したデータ及び GTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

東北大学、東京大学、鹿児島大学

水産試験場等（北海道、岩手県、宮城県、秋田県、山形県、福島県、茨城県、千葉県、東京都、
新潟県、富山県、石川県、静岡県、愛知県、三重県、京都府、兵庫県、和歌山県、
鳥取県、島根県、山口県、徳島県、高知県、佐賀県、長崎県、宮崎県、沖縄県）

（順不同）

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